

# DUN'S REVIEW

## and Modern Industry

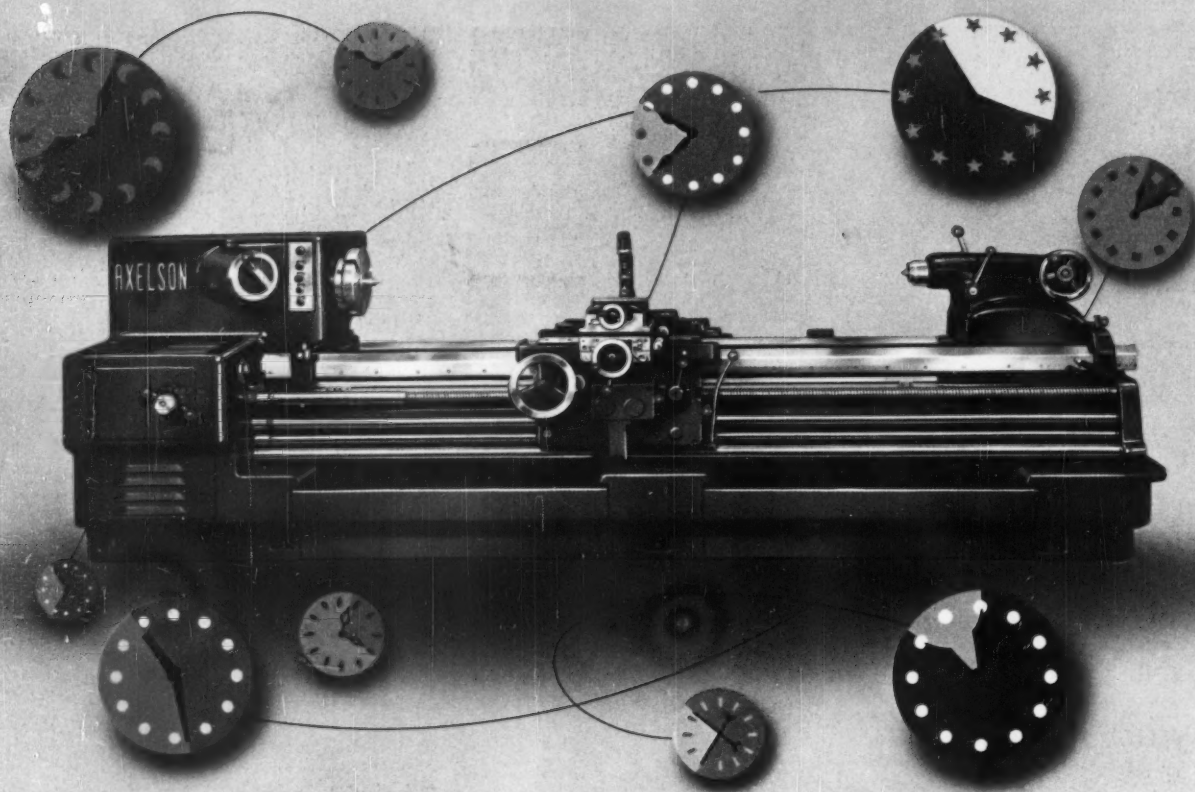
A *Dun & Bradstreet* PUBLICATION

OCTOBER 1955

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UNITED STATES LINES  
Outlook on Mergers... Industry's New Metal... 14 Retail Ratios





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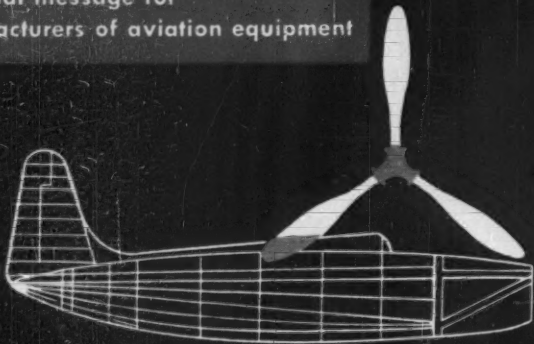
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READING  
AND  
ROUTING  
MEMORANDA

### Paths to Leadership.....37

LEON C. STOWELL  
*Chairman of the Board, Underwood Corp.*

The well-known company soon finds its leadership challenged and it must move on to greater heights. But the paths to leadership become more difficult.

### Getting Christmas Giving Under Control.....39

ALFRED G. LARKE  
*Employer Relations Editor*

Seasonal gifts can become a meaningless habit and a pointless expenditure if policy is not reviewed and practises checked, a DR&MI survey suggests.

### Zirconium: New Metal for Industry?.42

ANNETTA R. GARDNER  
*Industrial Editor*

This strong, corrosion-resistant metal has much to recommend it. But it also poses some pretty stiff problems. Here's how to appraise it for products and plant.

### An Outlook on Mergers.....45

EDWARD F. HOWREY  
*Chairman, Federal Trade Commission*

What's behind the current merger mood and what form will Government action take? The author reviews recent developments and questions.

### Pleasures, Profits, and Passports.....48

RICHARD LURIE  
*Editor, American Exporter*

Going abroad on business next year? To make it a pleasant as well as profitable trip, it's best to plan well. Here are some pointers that can help.

### Fourteen Important Ratios.....50

ROY A. FOULKE  
*Vice-President, Dun & Bradstreet, Inc.*

Competitors edging ahead of you? These ratios in twelve retail lines may help you to compare the strength of your business with others in the same line.

### The Fitful Beginnings of Office Automation.....55

The dream of automation in data processing and document production is fast turning into a hard fact. Companies, smalls as much as bigs, can profit now, reap amazing benefits later from early experience as techniques gather momentum. Already, developments seem to have outrun management's understanding of their full potential as competitive tools.

JAMES K. BLAKE  
*Senior Editor*

### Case Study: Integration at Scott Paper.....69

### 27 Companies Evaluate the Impact.....77

### Equipment Producers Expand the Concept.....93

### Where Do You Go from Here?.....105

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OCTOBER 1955

## DEPARTMENTS

### Heard in Washington ..... 7

The monthly report on the latest thinking in the Capitol as it affects business.

### Editorial ..... 11

The health of the economic climate depends on the health of the nation's executives.

### Voice of Industry ..... 12

Business speaks on Government service, nuclear power, and other current topics.

### The Trend of Business ..... 23

What's happening on the economic scene and what factors govern the coming months.

### Highlights and Sidelights ..... 33

From sun power to youth programs, here are comments on the month's news and events.

### Frontispiece ..... 36

The single eye of a porthole gazes on early morning in Havana Harbor—Devaney photo.

### New Methods and Materials ..... 119

Building on air, snapping pictures for production, putting facts and figures to work.

### Photo Visit ..... 127

A pictorial feature showing the manufacture of a modern product in a modern plant.

### Employer Relations ..... 133

What's labor's next demand? Indications are that it will be shorter work-week.

### Films for Management ..... 139

Wide screen process enters and slide films show new life in the industrial film world.

### Here and There in Business ..... 143

A gathering of the latest in products, uses, and developments for management aid.

## Next Month: Compass Points of Business

The important changes in business conditions described and evaluated in terms of their significance for the future. The most recent quarterly figures for 39 basic statistical series, combined with comparisons as far back as 1914, provide a sound basis for decision-making.

### DUN'S REVIEW Modern Industry



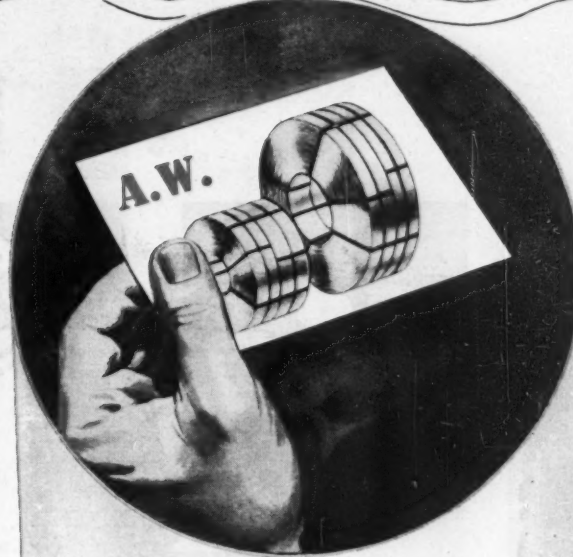
### Our Cover

Ocean-going passenger vessels are shown at their berths on the New York side of the Hudson River. The arrival or departure of these "floating hotels" means a burst of activity for the men of the port.

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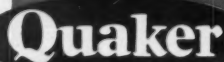
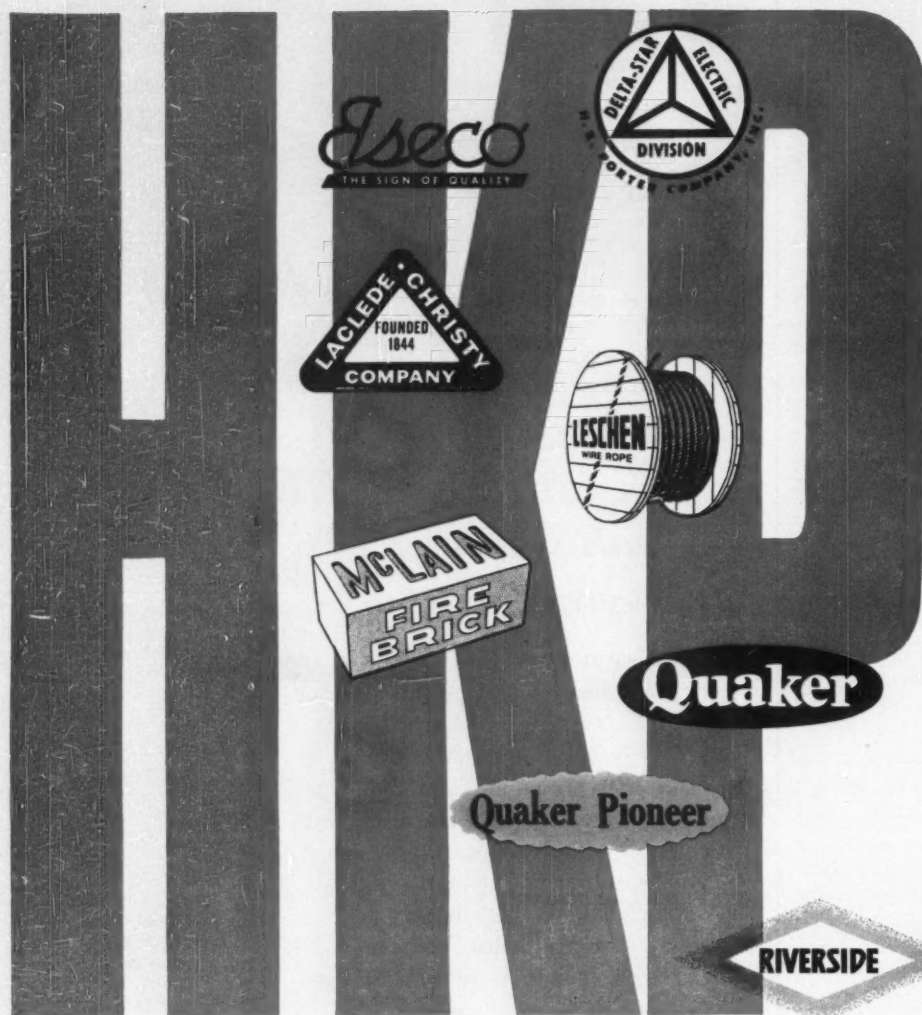
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**S**TATISTICS pouring into Washington are being scrutinized more closely than ever before. There is no nervousness among those responsible for economic policies. They feel the situation is well in hand but, like the driver of an automobile when it is moving at high speed, it is important to be unusually alert. The economy has attained great momentum. Factors that would bring about a decided reversal of the trend are not present. Indications are that the country is heading into its biggest Christmas.

It is realized that pressures on prices of many raw materials and manufactured products are great. One reason for the close scrutiny is to take action that will prevent any explosive upturn. Once that happens it then is too late for money and credit policy to help. The farm situation is such that inflation of industrial prices would be particularly unfortunate. Action to prevent price increases has to be taken early. To beat them down after a rise is not politically possible.

Flexible money and credit policy is undergoing its greatest test. The Federal Reserve has increased its control over the situation and is doing its utmost to improve the quality of credit. Inflationary notions, however, get powerful support both in and out of Congress.



Substantial increases in personal and corporate incomes lead officials to believe that the economy can continue on a high plane. The danger of crippling strikes is over. Labor peace is indicated for 1956. Prospects are bright for a continuation of high level employment.

While levels of consumption are at new highs nothing approaching a buying spree has developed. Some concern is expressed about inventories. Efforts are being made to cut down the lag in those figures. It is

believed that merchants can be relied upon to use common sense in accumulating goods.



Selection of a cabinet is one of the most difficult tasks a president has to undertake. Limitations placed on selections frequently prevent appointment of those best qualified. There are geographical considerations. Appointments to such departments as agriculture and labor must be persons acceptable to large groups. Despite these handicaps it is conceded very generally that the present cabinet is an exceptionally strong one. President Eisenhower cannot be accused of selecting weak men so he would loom large in comparison. They are not subservient men. Each is respected in his own field. Every section of the country—East, New England, North, West, and South. Secretary Folsom has his legal residence in New York, but he was born in Georgia. The two portfolios most plagued with controversy—state and agriculture—are in the hands of men who are not hostile types.

A major effort will be necessary for the economy to absorb the 33.33 per cent increase in the wage base voted at the last session of Congress. The wisdom of the Administration plan, which was defeated, to raise the minimum wage gradually will become more apparent, it is believed, as the new scale goes into effect. Results of the law will extend into the non-covered areas and encourage demands for a similar increase in differentials above the minimum wage.

The action raises these questions: "If a broad increase in wages can be brought about by legislative action where is it going to stop? In principle, could not Congress go further and fix all wage rates?" Legislators from Southern States recognize that

the real purpose of the legislation was to equalize wages in all parts of the country. Some of them voted for the \$1 minimum on the assumption that it would forestall a \$1.25 minimum that likely would have been voted had the bill gone over into an election year.



No change in the Taft-Hartley law at the next session of Congress is expected. There is a general desire to leave delicate matters untouched in an election year. A separate bill covering the handling of welfare funds may be enacted. Supervision of such funds probably will be lodged in the Treasury and Justice departments.

Bankers and officials of finance companies are more worried about consumer debt than is the Federal Reserve. Losses are negligible. Repossession rate was higher in 1938. The central bank feels it is doing all that is necessary at present by increasing the cost of credit. There is evidence that a high percentage of consumers are economical.

Federal officials were confronted with difficult problems in extending aid in the flood stricken regions. Use of public funds is surrounded by many restrictions. Uncle Sam is being accused of being hard-hearted by those who do not realize that fact. The law provides specially that only \$10 million of road money may be used for highway and bridge rehabilitation. Even that fund may be expended on only the federal aid system. Another example is the \$25 million limitation for disaster relief in the Small Business Administration law.

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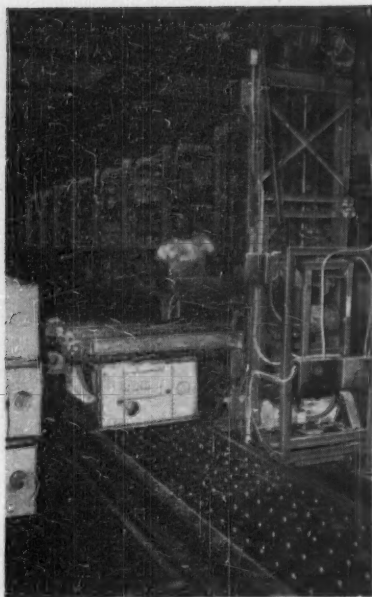
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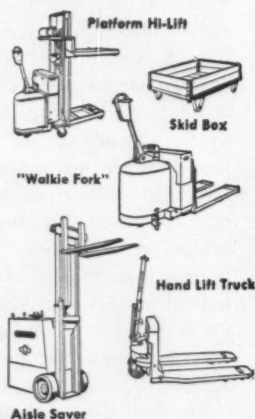


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sities. Such grants, however, are made only when a local advisory committee establishes that the victim is without resources.

What Commerce Department officials regard as a "smart merchandising" technique was used by some eastern stores when storm warnings began to go out. Placards calling attention to "hurricane supplies" were posted. Inside special display was made of lanterns, candles, first aid kits, rope, tarpaper, tarpaulins, canned heat, slickers, battery radios, and other articles for which there would be special need in case of a storm emergency.

Government agencies will include in future suggestions going to business, the need for disaster plans. Calm study in advance of the steps that could be taken after a flood or other devastation is a precaution the need of which was emphasized by the recent floods in New England where only two or three concerns had developed such plans.

Plant location, design and layout in the future will be influenced importantly by experience with flood waters in New England—sites on high ground, more one-story buildings, less use of basement space.



Principles laid down by the Administration may now be appraised on the basis of their implementation. Action on items such as watches and bicycles tends to obscure the great advance made in the field of international trade. The reciprocal trade act was extended and the whole list of non-dutiable items bound on the free list. A new attitude exists on the part of customs officials. Arbitrary interpretations and unnecessary red tape have disappeared. While the watch and bicycle rulings seem to be inconsistencies they emphasized that flexibility would be exercised. Despite heavy pressure there has been strict adherence to flexibility in support prices for farm products.

Progress has been made toward the realization of a balanced budget. A task force is studying the

problems of blighted areas and marginal farms carrying out the pledge to safeguard human resources. Efforts to get cheaper health and accident insurance will be pushed harder than ever at the next session of Congress.



The Administration is determined to bring the budget into balance before Congress can act on a tax cut. That would put Congress in the position of forcing the Government back into the red at a time that such action would seem foolish if increased receipts should not justify it. Secretary Humphrey summed up his position in a few words. He is opposed to "cutting taxes out of borrowed money."

Representative Daniel A. Reed, the ranking Republican on the Ways and Means Committee, is convinced that voters do not place political expediency above stability.

Inflation, he believes, takes a much greater toll than high taxes.

It is becoming increasingly difficult to induce men with specialized knowledge of business matters to help Government agencies. When need arises for such a person nearly everyone asked declines on the ground that he might be smeared. Officials urge business men to consider the source of such criticism. In the whole history of politics the demagogue has been a factor. This must be accepted as inevitable in a democracy. Business men are being asked to take note that it is only a few politicians who voice the criticisms. The prevailing feeling in Congress is that it is the duty of business men to accept assignments in the Government when they are needed.

Statistics constitute one of the Government's most valuable services. Federal statisticians feel that more should be done to acquaint the rank and file of business men with the worth of the data that Government and private agencies collect. \$60 million of federal funds is expended annually in gathering and compiling this information.

*Paul E. Wootton*

WASHINGTON, D. C.



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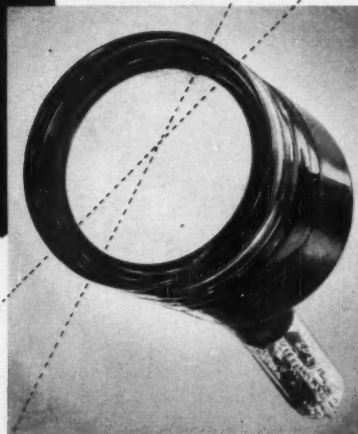
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# Down the Coronary Trail

THE AXIOM that "more people rust out than wear out," is based on selective judgment. There is always the phlegmatic individual whose love of routine, and whose lack of sensitivity immunize him to the nervous strain that is the incentive to physical disorder. One of the tests of good management is good health among the key men in company management. The basis of good health in the trying competitive years of maturity is the sensible expenditure of mental and physical energy and the equally necessary program to recharge the nervous battery.

A good miler paces himself against the quarter miles, and sets up a reserve of strength for the drive toward the goal. Pacing is important in the game of business even though the competitive spirit is exercised in a different manner. The good manager delegates responsibility, has confidence in the people assigned to key rôles, and doesn't try to play all the positions on the team. Good management takes time to rest, finds diversions, and if golf, tennis, or bowling is among the physical fun, they are

indulged in according to the dictates of age and common sense.

The social hour at the club may be good fun and good business. The hobby is good if the hobby exercises the flabby muscles of the mind as well as the body and gives other parts of the brain a chance to relax. The human machine is a thing of wonder, considering the punishment it takes. It gets along with too little and too much, and when it complains, it is often the mild warning after years of neglect.

The business executive takes greater risks in mind and body than does the average man, and there is nothing to be gained when the risk exceeds the reward. Proper pacing against the demands of the day is the first step toward building that ease of mind and strength of purpose that is so necessary to the vigorous executive. And, if he is careful of his own health, he is equally concerned with the well-being of his staff. "A healthy mind in a healthy body," was the ancient Roman motto, and it is a simple objective in a complex day of ulcers and coronaries in high places.

## *The Editors*

It seems that Dun's Review and Modern Industry has been involved in a practical joke. Shortly after the August issue appeared, a number of post-cards were received by top management people calling their attention to the article on page 45. Although there was no signature, there may have been the impression that these cards came from the magazine. We did not send them out, but if you received one and laughed, the article did not apply to you. The article was, "The Executive of Inadequate Personality."

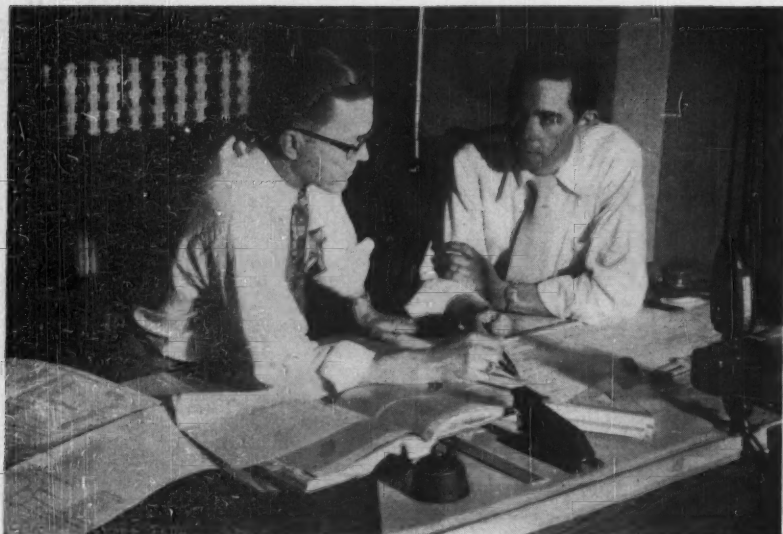
There has been a considerable response to this article. Many readers have asked for additional information from and about the author. Because of the nature of the article the author has insisted upon anonymity.

Eisenhower has received praise for his proposed road building program and there have also been some favorable comments heard about Senator Byrd's successful "road block." Perhaps New Jersey has found the way to solve highway problems created by the

opposing views of strong-minded men. Recently named chairman of the New Jersey Highway Authority was Mrs. Katharine Elkus White.

At the opening of General Motors' magnificent Powerama in Chicago last month, Harlow Curtice prophesied that the second 100 million horsepower of diesel power would be unleashed in the next ten years. For the statistically minded, this power if harnessed for a single day could lift some 50 million tons about three miles into the air.





Whether you plan to use LP Gas for standby protection, or as your prime fuel source, skilled Skellyfuel engineers can design and construct a propane-butane system for your needs. This assures you top efficiency.

## How Much Will Gas Shut-Offs Cost Your Company This Year?

**Now is the time to discover how a Skellyfuel LP Gas system can protect you against shutdowns — and pay for itself with the savings:**

They happen every winter... sudden gas cut-offs that can mean plant shutdowns with costly losses in production and profits. This could happen to you this year if you have an interruptible Gas Service Contract, or if a gas pipe-line breaks. So why risk it?

Like so many other companies are doing, now is the time to turn to Skellyfuel for a standby LP Gas installation. Skellyfuel gives you positive protection that may pay for itself with savings from as little as a few days use.

Your worries are over when you contact Skellyfuel. Our integrated service includes everything from analyzing your needs to designing and constructing your fuel system and supplying the right butane or propane for your plant.

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## VOICE OF INDUSTRY

*Business men and Government offices; small business advantages in automation; make or buy; atomic vs. conventional power; personnel.*

**Help business by aiding government**



*"It means the acceptance of public office."*

JOHN S. COLEMAN

President, Burroughs Corporation, before Manufacturers Association of Connecticut, in Hartford.

No group in our society can expect to have its point of view heard unless it states it continually and persuasively—before the public, before the Congress, in the Administration, in the press, within each of the political parties, and in every place where policies are determined and decisions made. Note that I say "unless it states its case *persuasively*." This is a most important qualification. It is often said, probably unjustly, that generals are always fighting the last war. Whether or not it is true of generals, I suspect the charge may well be true of some business men. At times I feel we may have been more interested in protesting against the passing of a world that will never come back, than in guiding and leading the world as it is.

What, then, does all this mean for us? It means the acceptance of public office. It means the willingness to serve on Government committees and commissions. It means the active participation in the councils of both parties—and though I suspect most of us tend to be Republicans, it is equally important, if not more so, that enlightened business opinion be heard in the Democratic party. It means a positive and helpful attitude to civil

servants and the men who, with meager awards and much abuse, shoulder great responsibilities. It means keeping ourselves informed on the issues of the day so that we can in public and private discussion, give the kind of leadership which will deserve to be followed.

Another condition must also be fulfilled if business men are to make their full contribution to the formation of public policy. That condition is the support and encouragement of their business colleagues. . . .

**Automation advantages for small businesses**



*"... companies ... are interested in large volume markets ..."*

PAUL B. WISHART

President, Minneapolis-Honeywell Regulator Company, before Symposium on Electronics and Automatic Production, in San Francisco, Cal.

While many of the larger companies already have large and competent staffs of technicians studying, devising and recommending automation programs, the smaller companies cannot afford the luxury of such departments.

But they do enjoy one conspicuous advantage. The growing number of companies that are in the business of producing automation equipment naturally are interested in large-volume markets, as is everyone else. A quick look at the census of manufacturers tells any such supplier that if he is looking for volume, the number of plants with less than 1,000 employees is



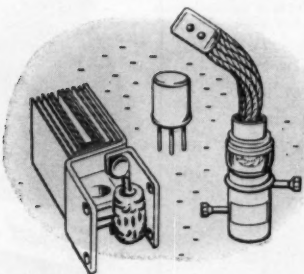
## A symphony in your palm

Now, thanks to a rare metal called *germanium*, an amazing semiconductor material, you can take your favorite radio program with you wherever you go.

By replacing bulky vacuum tubes with streamlined germanium transistors, radio manufacturers are greatly minimizing overall weight and size, yet increasing efficiency, decreasing power demand and maintenance. And other electronic manufacturers are finding equally important applications

for germanium semiconductors—in products that range from hearing aids to complex computers.

Because raw materials used in semiconductor products must be of the highest purity and uniformity, manufacturers of transistors and rectifiers turn to Eagle-Picher, the nation's first and principal source of germanium. They rely on Eagle-Picher for rigid quality control geared to meet their exacting specifications.



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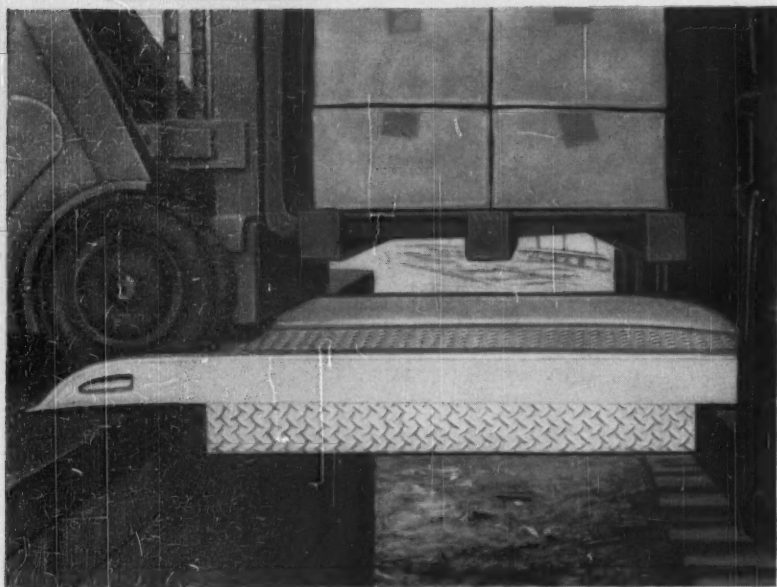


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## properly spanning this **SMALL** difference . . .



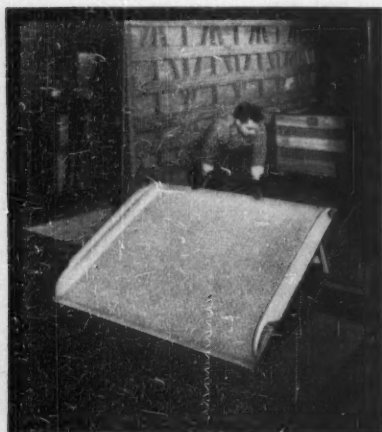
## will make a **BIG** difference in your loading costs!

The small gap between dock and carrier is an important one! If neglected, it can cause a large gap in your profits! If properly spanned with a Magliner magnesium dock board, it can make your shipping-receiving costs go down—and stay down!

Job-engineered to meet the requirements of your dock and loading operation, Magliners speed traffic . . . move more loads in less time! They're made of magnesium for greater strength and safety, long service life and easy one-man handling. Most

important of all, Magliners are engineered by dock board specialists for your specific job—and manufactured by mass production methods that keep prices down and deliveries prompt!

Let us prove that properly spanning the small distance from dock to carrier will make a big difference in your loading costs. Don't miss this opportunity for substantial savings! Write today for Bulletin DB-204 and the name of your local Magline representative.



**WRITE TODAY!** Send your name and address for a copy of Bulletin DB-204!

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PINCONNING, MICHIGAN**



*Canadian Factory, Magline of Canada, Ltd., Renfrew, Ontario*

where the volume market lies. His urge, therefore, will be to design his wares, in so far as possible, to fit the needs of these more numerous small businesses.

I am not saying that automation equipment will be in the class of the shelf item. But I am sure that this logical interest in the broad rather than the narrow market will ease the load on many a small company which wants to benefit from a certain amount of automation but cannot afford the cost of designing and tailor-making all of the necessary equipment.

My guess is that we will be astonished to look back ten years from now and see how much automation has resulted from the offering in the marketplace of standardized automation equipment, developed to meet the common denominator requirements of hundreds or thousands of small and medium-sized companies.

I would like to lay some emphasis on the influence of automation upon quality. It will improve the quality of products generally no matter the plant's size. This is consistent with all of our experience to date.

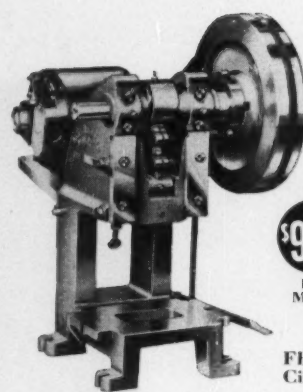
*Make or buy?  
What's the answer?*



**CARTER C. HIGGINS**

*President, Worcester Pressed Steel Company, before National Association of Purchasing Agents, New York, N.Y.*

Creative purchasing should play a part in establishing make or buy decisions. Cost comparisons of your own costs with outside costs are important,—maybe not for every job, but at least sufficient for a general check. Unless estimates of inside costs fairly reflect the costs involved, it may be costing your company money. After all, inside your plant you will have all of a supplier's costs except for his sales, shipment, profit and income tax expenses. The fact that he must be efficient to survive, means that he has been overcoming such minor



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**2-Ton Power Bench Type**

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For light work—stamping, forming, riveting—metal, fiber or other material.

Overall height 20 1/4" . . . Base size 9" x 8 1/4" . . . Die bed 6 1/4" x 8" . . . Ram face 1 1/2" x 3 1/2" . . . Ram stroke 3/4" . . . positive 3/4" ram adjustment . . . sturdy, single pin, non-repeat hand lever clutch . . . V-belt drive . . . weight 105 lbs.

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## uses **VICKERS** HYDRAULICS

### to provide *Super Versatility*

The new Oliver Super 55 Tractor demonstrates to excellent advantage the many benefits that Vickers Hydraulics offer the design engineer. On the Super 55, a Vickers valve and pump are used to provide the 3-point hitch tools with either automatic constant draft or automatic constant depth . . . at the flip of a lever. By addition of the Vickers 3-in-1 Valve shown below a separate and independent control system can be provided for operating front- or side-mounted equipment. Built-in overload relief protects against damage, while merely turning a knob on this valve changes the amount of oil flow for fast or slow operation.

The versatility of Vickers Hydraulics is very useful to design engineers concerned with a wide variety of other products. For information upon applications similar to your own particular needs, get in touch with the nearest Vickers Application Engineering Office listed below.

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People who look for quality  
in tractors and farm equipment  
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7245



#### **AUTOMATIC CONSTANT DRAFT CONTROL**

When irregular ground or soil conditions tend to increase or decrease draft, the Vickers Servo Valve acts automatically to raise or lower the implement slightly. Movement is so smooth as to be almost imperceptible . . . with no sign of jump. Overloading, wheel slippage and stalling of tractor are prevented. Flipping a lever on the valve automatically provides constant depth regardless of ground contour or changing soil.

#### **AUTOMATIC IMPLEMENT POSITION CONTROL**

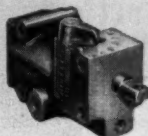
#### **INDEPENDENT HYDRAULIC CYLINDER CONTROL**

Addition of Vickers 3-in-1 Valve permits operation of pull-type and mounted equipment of all kinds independent of the main hydraulic system but using same pump.



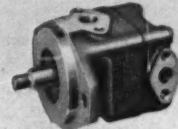
**VICKERS  
SERVO  
VALVE**

Provides smooth, accurate and instant response to load or position changes of hitch tools. It is mounted inside the oil reservoir and has an external lever.



**VICKERS  
3-IN-1  
VALVE**

Four-way directional valve with built-in flow control and relief valve is mounted externally to provide control for separate hydraulic system (front- or side-mounted equipment).



**VICKERS  
PUMP**

Hydraulically balanced and having automatic wear compensation, this pump delivers more oil while taking less power. A single pump supplies all needs.

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differences for years, while captive operations may go on draining your profits more or less indefinitely.

The principal reasons for making are that it looks cheaper, that it is easier to control your own schedules and design changes, and maybe on some fussy parts, you can be more of a specialist than any outsider. To a limited extent, your plant overhead will be absorbed by employing more people in making, but making is not the cure-all for high overhead. How long can you pay more for a part than its value?

The principal reasons for buying are that it looks cheaper and that you don't have the space, equipment, or know-how to duplicate that of the outside supplier. His knowledge can be helpful to you. Your company wants to be free to concentrate on your specialty. . . .

Let me urge creative buying and wise policies. Small savings in buying dollars or in making dollars loom large in relation to your profit margins. . . .

Making should not be based on it being a good feeling to expand your plant and number of employees. Base it on being good business.

*The economic future  
with atomic power*



"... it is important that we make haste slowly."

DR. T. KEITH GLENNAN

President, Case Institute of Technology, before Alumni Day Conference, Massachusetts Institute of Technology.

One often hears the question asked—when will power generated through the use of nuclear fuels replace power generated through the use of conventional fuels? The question can be answered rather simply. For a long time to come (this) will be supplemental power. It will dominate the power field only when it is cheaper than conventional power generation and when the existing power plants are retired from service by reason of age or obsolescence. But in the question there seems to be some suggestion that when atomic power

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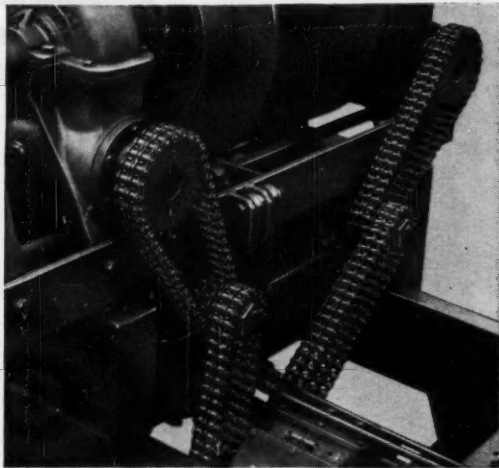
Look up National Truck Leasing System in your local 'phone book, or write for "How Leasing Helps Your Financial Statement" and a listing of NTLS Companies in brochure No. D-7

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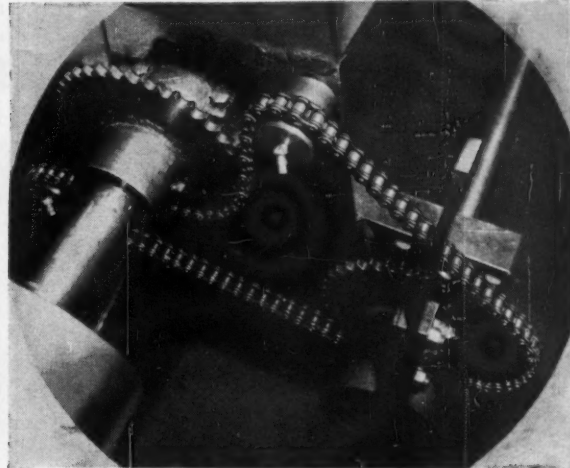
LEASE your trucks



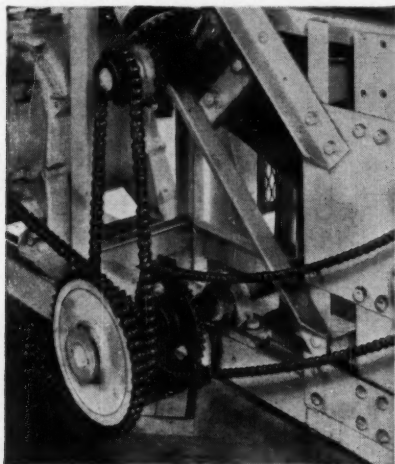
## Select **DIAMOND** (FROM STOCK) for drives like these



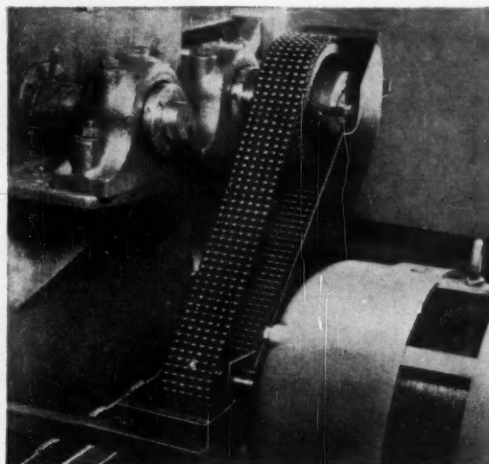
One Shaft to Another  
Both Revolve Same Direction



One Shaft to Another  
Shafts Operate in Opposite Directions



One Shaft to Several



High Speed Motor Drive

### ALWAYS PRELOADED

For many, many years, Diamond Chain has been preloaded after assembly for the purpose of bringing pin-bushing seating into stabilized relationship prior to field installation.

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Not only flexible in application, but economical as well, Diamond Roller Chains maintain constant speed ratio and high (98-99%) efficiency.

Drive requirements can be met quickly because of the greatly increased range of STOCK Chains and Sprockets now available.

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Please refer to the classified section of your local telephone directory under the heading CHAINS or CHAINS-ROLLER

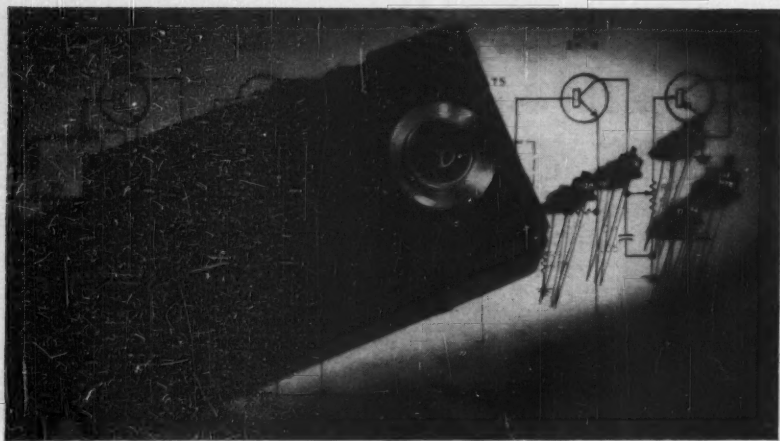
*The Roller Chain*  
**is DIAMOND**

TRADE



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**TRANSISTOR-RADIO!** G.E.'s new All-Transistor Portable, Model 675, made possible by High Frequency transistor developed by General Electric.

## NOW—A FULL LINE OF G-E HIGH FREQUENCY TRANSISTORS FOR ALL RADIO APPLICATIONS

New G-E H.F. PNP Transistors, 2N135, 2N136, 2N137,  
Complement the G-E 2N78 NPN

**T**HIS new line of G-E High Frequency PNP Transistors offers immediate benefits to electronics manufacturers for use in RF and IF amplifier circuits. The new H.F. designs, now in full production, were created specifically for use in radio circuits. The line provides minimum alpha cut-offs of 3 MC, 5 MC and 7 MC—coupled with a 5 ua maximum collector cut-off current. The result: all the high-gain and high-power advantages of other General Electric transistors, *plus* operating ranges of from 3 to 15 MC depending on the transistor selected.

### NOW IN COMMERCIAL RADIO CIRCUITS

In the circuit above, the 2N136 is used as a converter—its 5 MC minimum alpha cut-off assures stable oscillator performance and high conversion gain. The 2N137—with 7 MC minimum alpha cut-off—provides 33 db gain at 455

KC. The high frequency 2N135 offers a higher collector voltage rating for the second IF where it is needed. The 2N78 NPN transistor—originally designed for computer and RF circuitry—proved ideal as a power detector and audio amplifier to drive a 2N44 power output transistor with direct coupling.

### PRODUCTION QUANTITIES AVAILABLE

General Electric's new high frequency line is in mass production now. Detailed characteristics and specifications of the G-E 2N135, 2N136, and 2N137 transistors may be obtained upon request. Your G-E Semiconductor specialist and our factory application engineers have the answers to your transistor radio circuit questions. Call them in, or write: *General Electric Co., Semiconductor Products, Section X78105, Electronics Park, Syracuse, N. Y.*

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**GENERAL  ELECTRIC**

does replace conventional power something new and different will have a great effect on our lives.

As a nation, we have utilized power to supplement and to replace the physical exertions of men. Power generated from nuclear fuels will do this just as well but no better than is the case with conventional fuels. Stripped of its glamor, nuclear power will extend our capacity to substitute mechanical energy for human energy. There can be no question but that nuclear fuel assures the continuation of our type of mass production economy for generations and perhaps centuries to come.

*Getting along  
with the employees*



*"... communicate  
with the union  
through the em-  
ployees..."*

THOMAS G. SPATES

*Professor of Personnel Administration,  
Yale University, before Manufacturers  
Association of Hartford County, Inc.*

The goals of modern personnel administration should be defined as: a) To maintain mutually satisfactory interpersonal relationships among all members of each organization group; b) To help in the growth of the personality of everyone on the payroll.

Within the framework of these objectives, I have some specific recommendations to offer:

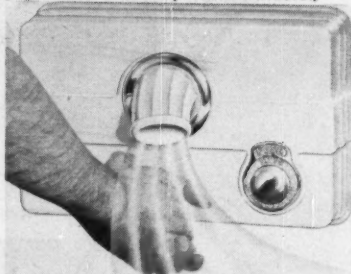
1. Management should administer its affairs by consultation and explanation, not by autocratic directives. This is necessary to give workers a sense of participation.
2. Management should develop an organization consistent with the established and proven principles we have inherited.
3. Management should commit itself in writing as to its philosophy and means of implementation.
4. Management should do what is necessary to develop skills of supervisors in handling problem solving conferences.
5. If your company is unionized, communicate with the union through the employees, rather than the reverse.

**\* Automatically!**  
*Sani-Dri*  
**Electric Dryers**

**\* eliminate  
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by over 50 years of  
experience

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Uplifter load-  
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truck.



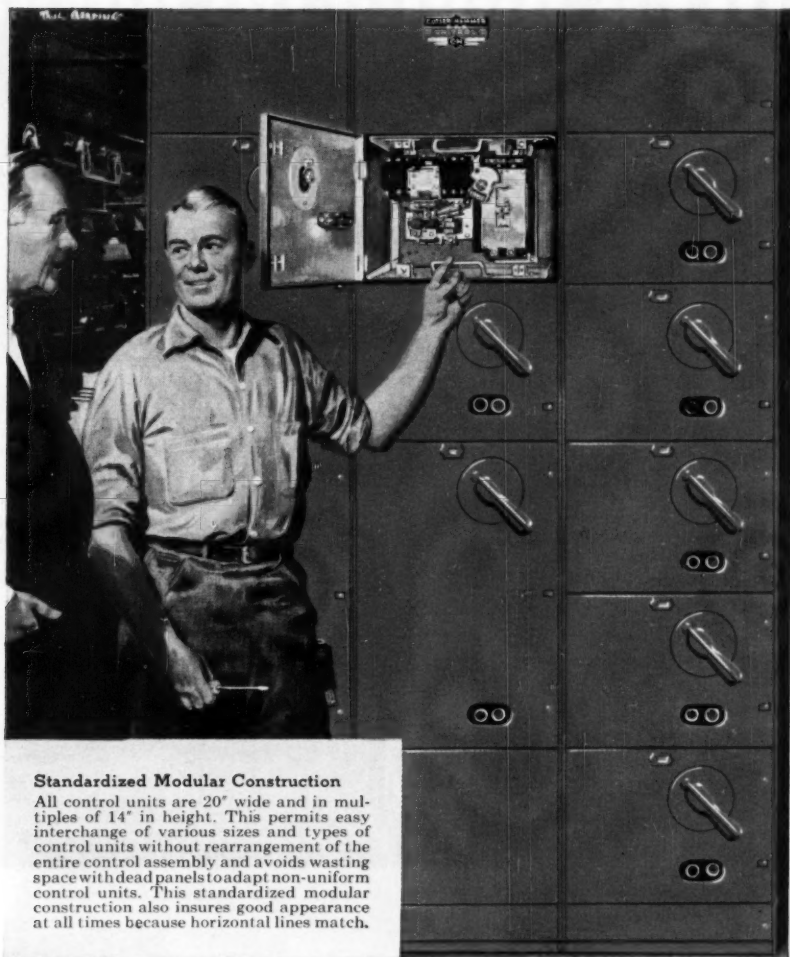
Revolvator Up-  
lifters: 1000 lb.  
and 2000 lb.  
capacity. Also  
dual capacity  
hand-operated  
models.

**Revolvator Uplifter Portable Elevator.** Multiple use, multiple purpose Revolvator Uplifters, products of 50 years of engineering know-how solve handling problems throughout all industry. Ideal for shop usage, Revolvator Uplifters also speed handling in the shipping department with equal efficiency. The Uplifter is ideal when no shipping dock is available. Electrically-powered Uplifter portable elevators are available in either "plug-in" or battery operated models. Write for information.

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8702 Tonnelle Ave., N. Bergen, N. J.

WHAT'S NEW IN MOTOR CONTROL? \* \* \* GET IT FIRST IN CUTLER-HAMMER

# Now...the spectacular new Cutler-Hammer ★ ★ ★ Unitrol



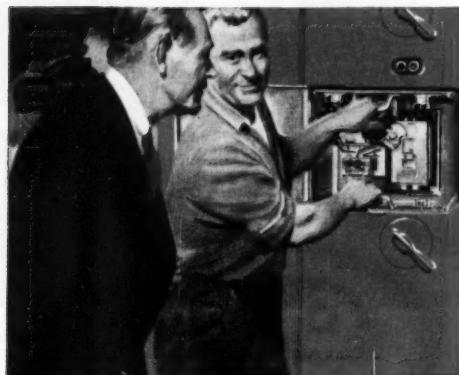
## Standardized Modular Construction

All control units are 20" wide and in multiples of 14" in height. This permits easy interchange of various sizes and types of control units without rearrangement of the entire control assembly and avoids wasting space with dead panels to adapt non-uniform control units. This standardized modular construction also insures good appearance at all times because horizontal lines match.

*Star studded with features that provide fastest installation or rearrangement of motor control, maximum space economy, unparalleled motor control performance and new safety for men and equipment.*

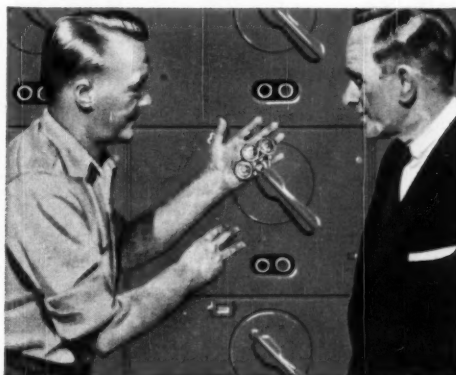
Fifteen years ago Cutler-Hammer Unitrol pioneered the idea of flexible control centers... the modern way to organize control equipment for better performance, greater safety, and quick rearrangement to meet industry's constantly changing control requirements. Few engineering advances ever received such enthusiastic acclaim or such rapid widespread use. Through the years there have been many imitations, but only *one* Unitrol.

Today Cutler-Hammer engineering leadership opens another new era in flexible control centers with the great new Cutler-Hammer ★ ★ ★ Unitrol. Star studded with features that permit new speed in installation, new speed in any reorganization of the equipment, more control units in less space, new safety for men and equipment and new motor control performance that simply has no equal. Whether you desire truly modern control for just a few machines, a full department or an entire factory, be *sure* you have all the facts about the new Cutler-Hammer ★ ★ ★ Unitrol before you buy. Write or wire today. CUTLER-HAMMER, Inc., 1436 St. Paul Avenue, Milwaukee 1, Wisconsin.



## Unitrol Uni-Plug Saves Time and Trouble

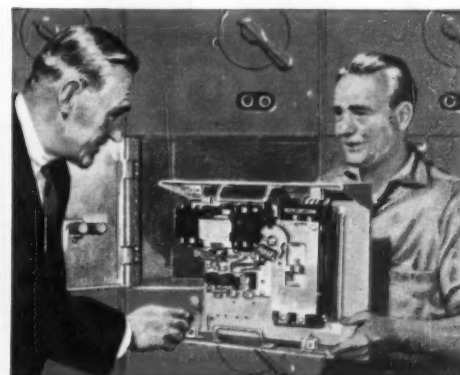
Uni-Plug automatically connects each control unit to its power supply when the unit slides into operating position. It also assures complete disconnect whenever the unit is pulled forward for inspection or attention. All units can be locked in "disconnect" position. Unitrol Uni-Plug thus saves wiring and rewiring time—and insures safety.



## 3-Position Self-Aligning Disconnect Operators

Unitrol control units can be equipped with either fused disconnect switches or circuit breakers. Both types have self-aligning three-position operators which are arranged for padlocking with as many as three locks in "off" position.

*The name UNITROL is a Cutler-Hammer trade mark.*

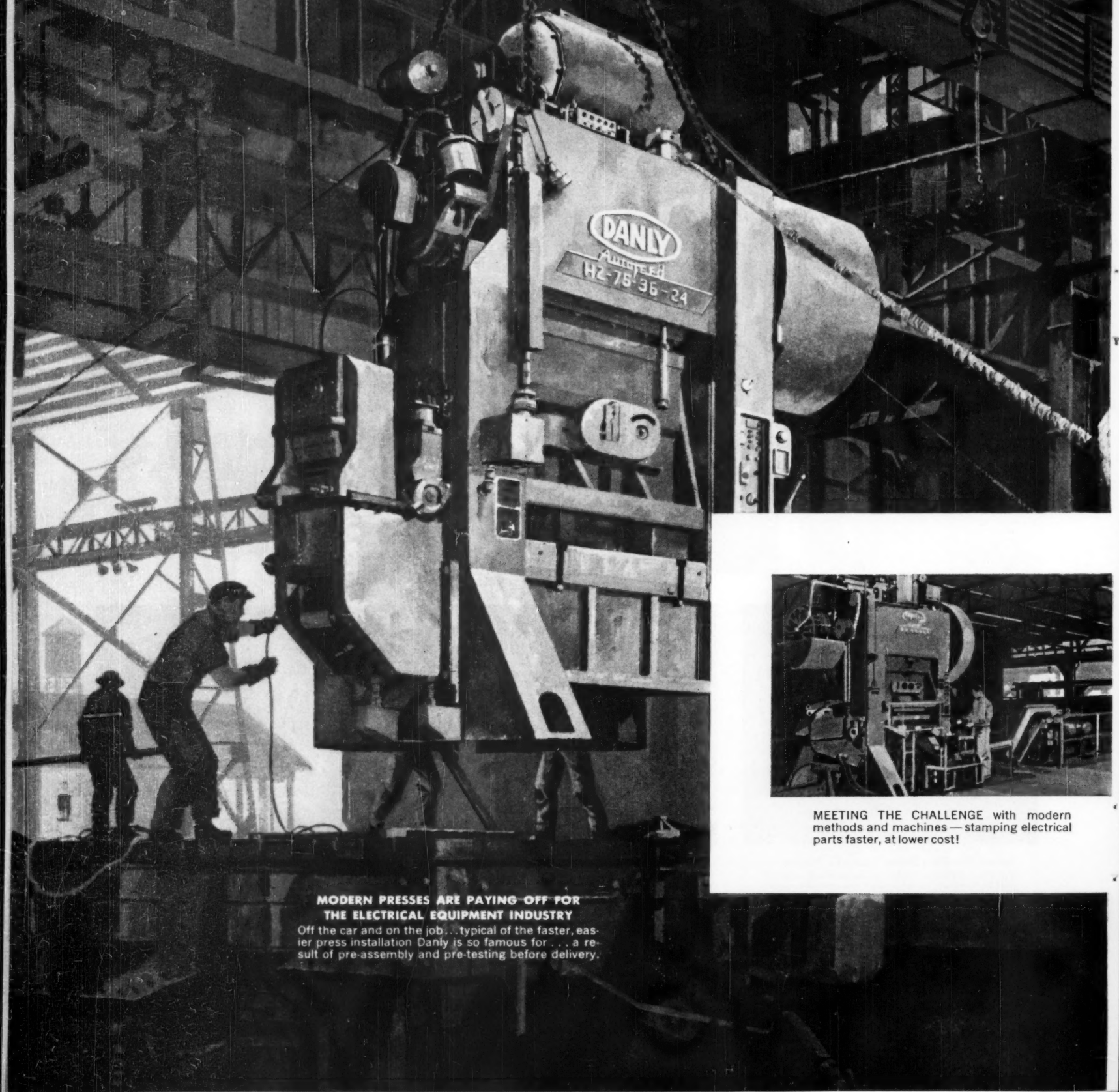


## New Cutler-Hammer ★ ★ ★ Control Units

New Superlife Vertical Contacts end care and costs for all time in normal control uses. Adjustable Load Sensing Coils with 3% overload accuracy (compared to usual 12%) permits motors to work harder safely. Full 3-Phase Protection now costs as little as \$6 (list price) additional per control unit. Compare this with the cost of just one motor burn-out.

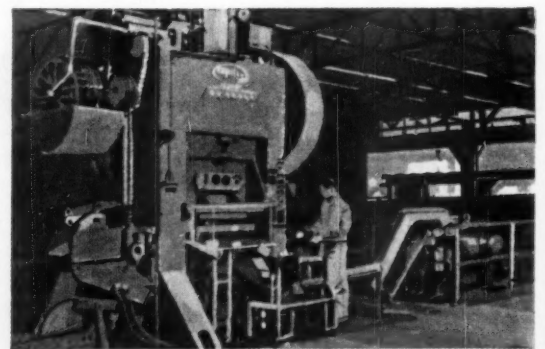


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Off the car and on the job... typical of the faster, easier press installation Danly is so famous for... a result of pre-assembly and pre-testing before delivery.



MEETING THE CHALLENGE with modern methods and machines—stamping electrical parts faster, at lower cost!

# Presses are production costs

An important part of today's capital goods expenditure in the electrical equipment industry is ear-marked for Danly Presses

The progress story of today's electrical equipment industry is being told in terms of more efficient, lower cost production. It is being written by leaders in the industry who are turning to newer, more efficient machines to achieve the greatest possible production economies. Modern presses are foremost in their consideration. And more than ever before, they call on Danly to do the job.

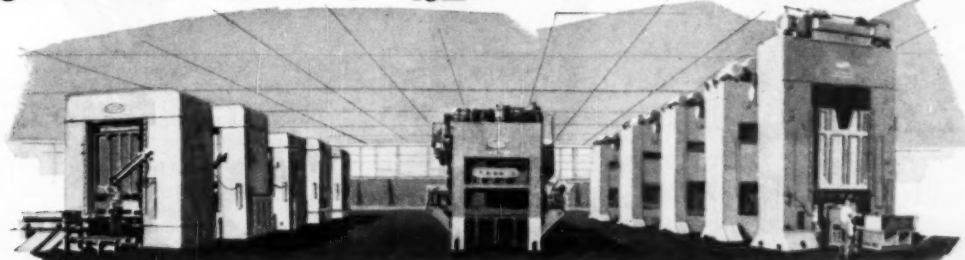
Lasting precision performance by Danly, resulting in more stampings per shift, is one of the big reasons why Danly Presses are the big choice in practically every industry. It starts with Danly's extremely accurate yet extra-rugged construction. But Danly goes further, pre-assembles and work-tests every Danly Press at its own plant to eliminate major installation delays. Danly also makes the electrical and pneumatic control system an integral part of the press . . . a method that actually saves weeks of installation time. And Danly employs automatic oil lubrication, reduces press maintenance by hundreds of hours . . . assures positive press protection with a fool-proof lubrication safety system. The results are many: unmatched performance records, months of continuous peak-load operation with no maintenance, less costly down time, fewer rejects. Dollar-wise advantages are unprecedented . . . increased production at much lower cost, increased die life.

You, too, can have these same cost saving advantages that Danly Presses give to so many others. Like them, you'll want complete facts and figures. You can get them by talking with a Danly engineer. Why not phone him soon?

## DANLY MACHINE SPECIALTIES, INC.

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Danly's broad line offers all industry the right press to meet every modern mass production need



### DANLY UNDERDRIVE PRESSES

Single, double and triple action in a wide range of press tonnages.

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Industry's No. 1 choice for uninterrupted production, longer die life.

### DANLY STRAIGHT SIDE PRESSES

Single and double action, from 50 to 3000 tons . . . right for every tough job.

*It costs less to run a Danly Press*

**DANLY**

MECHANICAL PRESSES

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# "UPSTATE, N.Y."



ONE of the busiest inland ports in the world is Buffalo harbor. Soon to become a seaport (thru the new St. Lawrence Seaway), it's a vital link between the Great Lakes area and the East. And it's a symbol of the expanding economy of the whole bustling region known as "Upstate"... from the Hudson River to the Niagara Frontier.

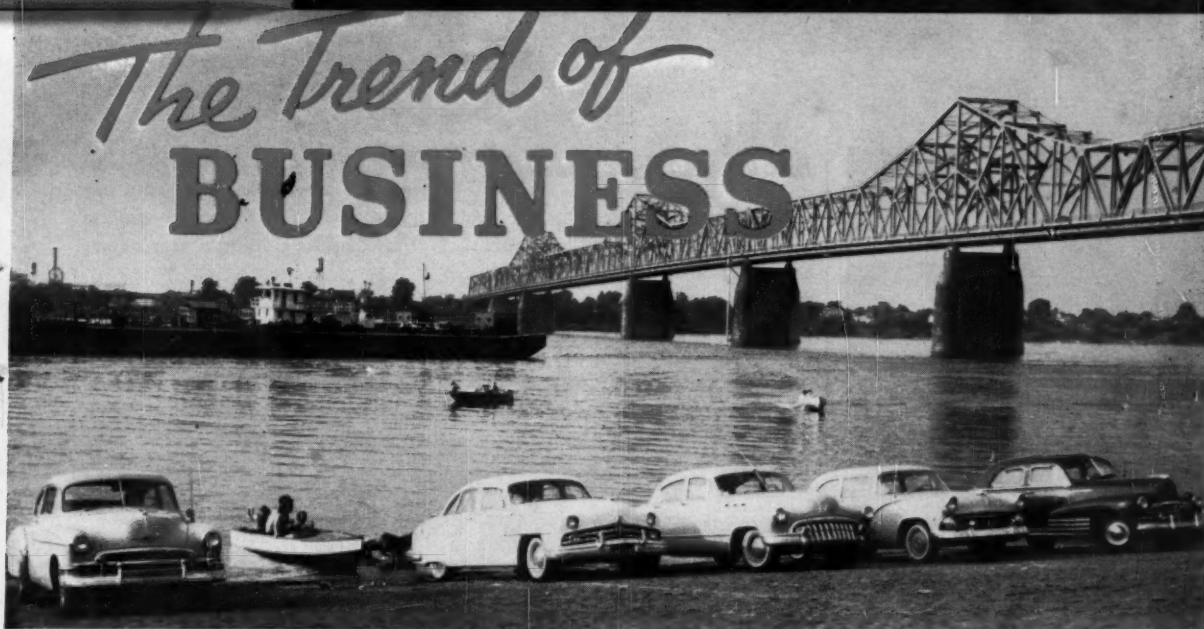
Many of the world's richest markets, including busy, expanding Canada, lie on "Upstate's" doorstep. Most Upstate people are skilled, home-owning workers who enjoy living in its stimulating four-season climate.

Looking for a place to move your offices, establish a new plant or a research center? Let us tell you more about what Upstate has for *you*, including all the low-cost electricity you need! Write Earle J. Machold, President, Niagara Mohawk Power Corporation, Syracuse, N. Y.



The New York State Thruway flows through the heart of the Niagara Mohawk System... a land of opportunity for any business that wants a bigger market for its products and skilled employees to make them.

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by  
NIAGARA  
MOHAWK**



ALONG THE OHIO RIVER, LOUISVILLE, KY.—HOWE PHOTOGRAPH

► **New Peak in Production**  
► **Testing Period Ahead?**

► **New Orders Still Rising**  
► **But Failures Increase**

## Making Tracks

Like a resolute little locomotive, the American economy kept chugging upward determinedly during August and September. The widespread confidence of most business men provided the steady driving force while there was certainly no lack of fuel. Among the sources of steam for business in the months ahead are:

- Low inventory levels
- Higher peak-level plant and equipment expenditures
- Rising consumer incomes and spending
- Increasing government (local, state, and Federal) spending.

Week-by-week spot checks in 66 offices in 39 States reflected steady improvement in industrial production, new orders, factory employment, retail sales, and collections during September. Among the few dark spots which marred the generally bright picture were lagging farm income, rising costs, and the persistence of several distress areas in the textile towns of New England and coal-mining areas of Pennsylvania.

The rise in industrial production in September was somewhat less than usual for the month. Most indus-

tries were scraping capacity ceilings and shortages of metals hindered operations in many lines.

During August total industrial output had spurred ahead to 140 (1947-1949=100) a new record level, slightly above the previous peak last Spring. The gain over the year-ago level was an impressive 15 per cent. However, such gains may be less common in the months ahead for output was rising steadily last Fall.

This is a Business Conditions Staff Report, prepared largely from information gathered in 140 DUN & BRADSTREET offices in 46 States.

Automobile production fell sharply last month for model-changeovers but total production this year is widely expected to reach about 7.5 million, a new record. Automakers generally expect to sell slightly fewer cars next year.

During the current slowdown in automobile output many dealers ran many reduced price promotions to sell off their remaining 1955 models, about which there is much less concern than there was a month ago.

The orders for steel from automakers, which accounted for 24 per cent so far this year, fell much less than expected during the model-changeover period.

"The outlook for virtually all steel products is decidedly gloomy." This is how *Iron Age* magazine describes the extremely tight supply situation for most steel products. Many mills are running two months behind their delivery schedules and some items—particularly flat-rolled steel—will not be currently available until the middle of 1956.

*Continued on page 24*

## Weekly Business Signposts

SELECTED BUSINESS INDICATORS	LATEST WEEK*	PREVIOUS WEEK	YEAR AGO
Steel Ingot Production. Ten Thousand Tons	231	231	164
Bituminous Coal Mined Hundred Thousand Tons	99	86	81
Automobile Production. Thousand Cars and Trucks	141	96	71
Electric Power Output. Ten Million K W Hours	1058	1016	907
Freight Carloadings.... Thousand Cars	822	707	711
Department Store Sales. Index Number (1947-1949=100)	125	108	120
Wholesale Prices..... Index Number (1947-1949=100)	111	111	110
Bank Clearings..... Hundred Million Dollars	120	100	104
Money in Circulation.. Hundred Million Dollars	305	304	301
Business Failures..... Number of Failures	191	205	195

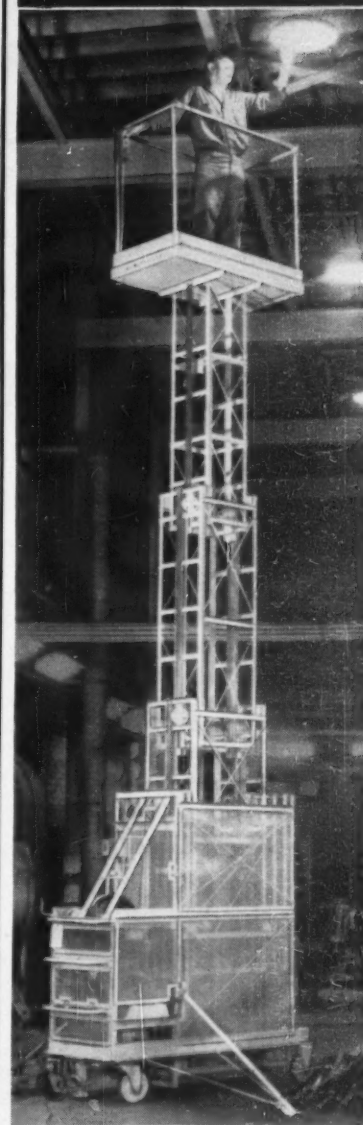
\*Steel data are for the week of September 24; all others are for the prior week.

Sources: Amer. Iron & Steel Inst.; Bureau of Mines; *Automotive News*; Edison Elec. Inst.; Assn. of Amer. Railroads; Bureau of Labor Statistics; DUN & BRADSTREET, INC.

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WORKS BETTER

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ENGINEERED FOR STRENGTH  
STABILITY AND SAFETY



Safety is our first consideration in building Hi-Reach Telescopes.

During the past quarter of a century of making Hi-Reach Platform Telescopes, our engineers have constantly improved the mechanical construction to obtain maximum stability, smooth time-saving lifting action, and safety.

Standard Models available from 10'-9" to 35 ft. high, and custom-built units as high as 100 ft. if you like.

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## Why, in one year, 73 companies paid 28% more for this Baker Gas Truck

The Baker Gas-O-Matic introduces a revolutionary new concept in automatic transmissions for gas-powered fork lift trucks. Instead of a torque converter, it employs a variable voltage generator—integral with the gasoline engine—and an electric motor.

The initial cost of this truck is about 28% higher than conventional clutch-type gas fork trucks. But . . . operating and maintenance costs are extremely low—in line with the higher priced battery-powered electrics. Moreover, frame, uprights, steering assembly, drive axle, etc.—in fact 90% of Gas-O-Matic's components—are standard Baker electric truck parts which always last 10 years or more.

### Gas-O-Matic users have proven that

1. Fuel savings, originally estimated by our engineers as 40%, are actually in excess of 50% over ordinary gas trucks.
2. Depreciation costs are less because truck can be amortized over 9 years instead of 5.
3. Maintenance costs are less—no clutch or transmission to wear out and replace—30% fewer moving parts—no complicated electrical system—engine operates at controlled optimum RPM.

**Write for**  
complete information  
about this unusual  
fork lift truck.

These Gas-O-Matic customers recognize the "lower-first-cost" fallacy—many of them have re-ordered for the second and third time—based on their experience with these trucks.

**THE BAKER-  
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1205 WEST 80TH STREET  
CLEVELAND 2, OHIO

A SUBSIDIARY OF OTIS ELEVATOR COMPANY

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**Baker**

handling equipment

## Business Budgets Boosted

New highs are ahead in the expenditures for plant and equipment according to the latest SEC-Department of Commerce survey, made in August. Such spending is expected to hit the record rate of \$29.7 billion in the final quarter of this year. The actual spending in the first two quarters topped earlier expectations as it has for more than a year.

Most of the current rise in this spending is coming from manufacturers although they provide only about 40 per cent of total spending for plant and equipment. Noticeable rises are slated by producers of durables, commercial companies, and particularly railroads which have boosted their spending plans about 20 per cent in recent months.

There continued to be doubt about the Office of Defense Mobilization program for fast tax write-off of new plants. Such spending may be cut if the program is not renewed. But it soon may be renewed for 12 of the 38 industries for which the program was suspended in August.

Spot surveys in 66 cities in 39 states indicated that employment probably dipped slightly during September, in keeping with sea-

sonal patterns. However, the total number of people with jobs last month was up about 2.5 million from the 62.1 million a year ago.

## Hire and Hire

As during August when a new record level of 65.5 million jobs was reached, the most noticeable rise in employment occurred in manufacturing. The year-to-year gains in total employment were spread through virtually all industries with the sharpest rise in plants producing durables. However, total factory employment is still below the 1953 peak.

Although factory jobs have reappeared with increased frequency during the past several months, the rise has not kept pace with that in industrial production, which has been spurred by new methods and machinery.

The very impressive total of 65.5 million people with jobs in August was made up of many temporary workers whose disappearance from the labor force will lead to an ebbing in the months ahead. About seven million of the total were part-time workers, and about two million of these were looking for full-time employment.

### Industrial Production

Unadjusted Index: 1947-1948 = 100; Federal Reserve Board

	1952	1953	1954	1955
January	119	132	124	135
February	123	136	126	135
March	124	138	126	137
April	120	136	124	138
May	118	136	124	138
June	118	136	124	139
July	108	129	126	131
August	123	136	123	140
September	131	135	126	142†
October	134	136	130	
November	134	130	130	
December	131	124	128	

### Consumer Price Index

Index: 1947-1948 = 100; U. S. Bureau of Labor Statistics

	1952	1953	1954	1955
January	113.1	113.9	115.2	114.3
February	112.4	113.4	115.0	114.3
March	112.4	113.6	114.8	114.3
April	112.9	113.7	114.7	114.4
May	112.0	114.0	115.0	114.2
June	113.4	114.5	115.1	114.4
July	114.1	114.7	115.2	114.7
August	114.3	115.0	115.0	114.8†
September	114.1	115.2	114.7	114.8†
October	114.2	115.4	114.5	
November	114.3	115.0	114.6	
December	114.1	114.9	114.3	

### Wholesale Commodity Prices

Index: 1947-1948 = 100; U. S. Bureau of Labor Statistics

	1952	1953	1954	1955
January	113.0	109.9	110.9	110.1
February	112.5	109.6	110.5	110.4
March	112.3	110.0	110.5	110.0
April	111.8	109.4	111.0	110.5
May	111.6	109.8	110.9	109.7
June	111.2	109.5	110.0	110.0
July	111.8	109.9	110.4	110.5
August	112.2	110.6	110.5	110.8
September	111.8	111.0	110.0	110.8†
October	111.1	110.2	109.7	
November	110.7	109.8	110.0	
December	109.6	110.1	109.5	

### Unemployment

Thousands of Persons; U. S. Bureau of Labor Statistics

	1952	1953	1954	1955
January	2054	1892	3087	3347
February	2086	1788	3670	3353
March	1804	1674	3724	3176
April	1612	1582	3465	2962
May	1602	1396	3307	2489
June	1818	1562	3347	2699
July	1942	1548	3347	2471
August	1604	1240	3245	2237
September	1700	1200	3100	2100†
October	1284	1301	2741	
November	1418	1699	2893	
December	1412	2313	2838	

### Industrial Stock Prices

Monthly Average of Daily Index: Dow-Jones

	1952	1953	1954	1955
January	271.71	288.47	286.64	398.43
February	265.19	283.94	292.15	410.25
March	264.48	286.79	299.15	413.91
April	262.55	275.28	310.91	422.99
May	261.61	276.84	322.85	421.38
June	269.39	266.87	327.91	440.79
July	270.64	270.28	347.66	462.16
August	276.70	272.26	346.06	457.00
September	272.40	261.80	352.70	477.00†
October	267.71	270.73	358.29	
November	276.37	277.09	375.70	
December	285.95	281.15	393.39	

Based on closing prices of 30 industrial stocks.

### Retail Sales

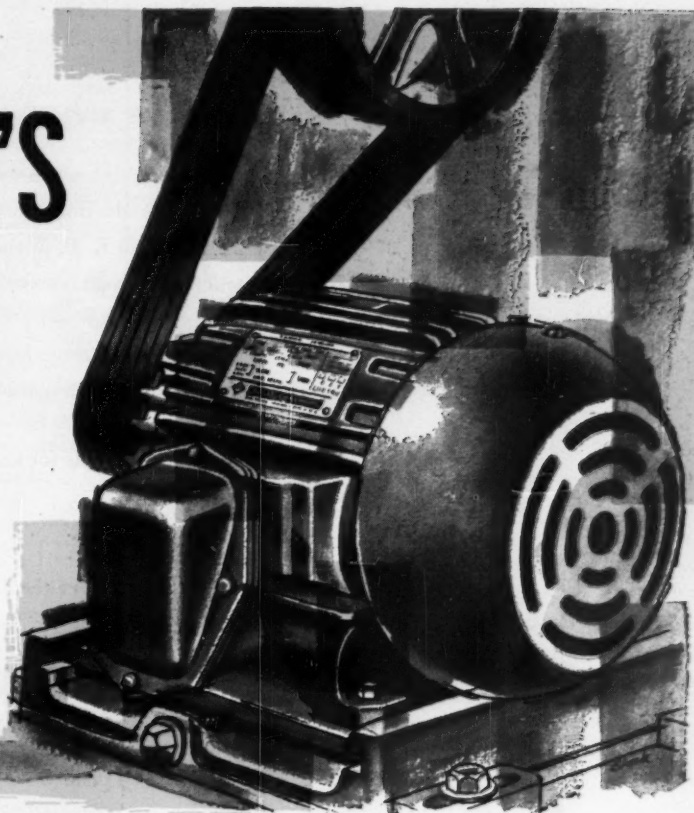
Billions of Dollars; U. S. Department of Commerce

	1952	1953	1954	1955
January	11.8	13.1	12.3	13.3
February	11.7	12.3	12.1	12.8
March	12.7	14.0	13.5	14.7
April	13.4	14.2	14.3	15.6
May	14.4	14.7	14.2	15.5
June	13.8	14.6	14.7	15.4
July	13.4	14.2	14.4	15.4
August	13.6	14.1	14.1	15.7†
September	13.6	14.1	14.1	
October	14.8	15.0	14.7	
November	14.0	14.0	14.5	
December	16.9	16.4	17.9	

† Approximation; figure from quoted source not available.

# INDUSTRY'S POWER

Depends on the  
Reliability of  
Motors Like This



**Allis-Chalmers  
motors have the  
most of everything  
you want or need**



NEMA standards set size and mounting dimensions for motors but detailed examination reveals important differences. These differences may result in substantial savings to you on maintenance, expensive downtime and long-range operating costs:

- **WEIGHT OF MATERIALS** — More iron, more copper in a motor provide margins of advantage in strength, rigidity and electrical characteristics.
- **BEARINGS** — Larger, double-shielded bearings make for longer motor life, less maintenance, less chance of failing under load.
- **COOLING** — Fan-cooled motors of ribbed design (illustrated) have 40% more radiating surface than ribless frames to dispel the motor heat that can fry insulation, cut operating life.

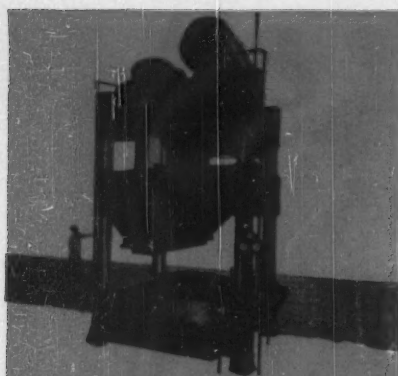
If your company is a user of industrial motors, it will pay you to find out why Allis-Chalmers motors rate tops in ALL of these vital factors. Ask any Allis-Chalmers motor distributor, district office, or write for details to Allis-Chalmers, General Products Division, Milwaukee 1, Wis.

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## ALLIS-CHALMERS



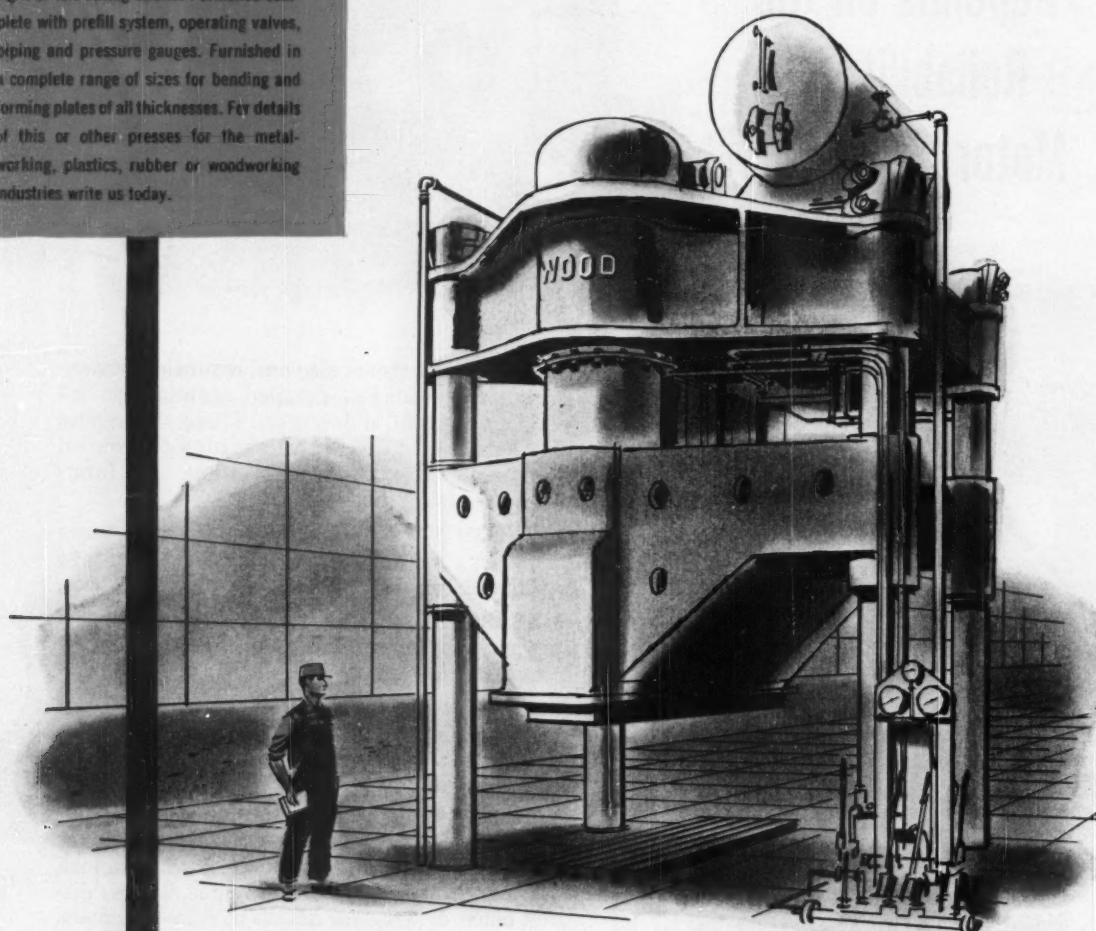




1500-ton Heavy-Duty Forming Press for bending and forming operations on heavy steel plate. Moving platen can be tilted right or left during stroke. Furnished complete with prefill system, operating valves, piping and pressure gauges. Furnished in a complete range of sizes for bending and forming plates of all thicknesses. For details of this or other presses for the metal-working, plastics, rubber or woodworking industries write us today.

## *You'll like what it does to production*

It's just plain common sense—when your down-time decreases your production is bound to increase. Down-time can't be eliminated, but R. D. Wood presses hold it to a minimum. The meticulous design, choice materials and careful craftsmanship that go into a Wood press produce a superior product—a dependable, smooth-working press that can't help but increase production records. Products with the Wood stamp of quality have been piling up production records for more than 150 years.



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MAKERS OF HYDRAULIC PRESSES AND VALVES • FIRE HYDRANTS • CAST-IRON PIPE • GATE VALVES • GAS PRODUCERS • ACCUMULATORS

Early indications pointed to a further dip in unemployment in September as many industries hired new workers and students and housewives dropped out of the labor force. During August unemployment fell less than is usual for that month, not because business conditions were weakening but perhaps because they were so good. An unusually large number of housewives came into the labor force but not all were immediately successful in finding jobs. The proportion of women in the labor force was the highest since the days of "Rosie the riveter" during World War II.

With more people at work than ever before, personal income in August expanded slightly from the record annual rate of \$305 billion in the prior month. Pay raises, cost-of-living adjustments, and longer hours helped account for the hefty size of total personal income which was up about \$18 billion from the year-ago level. Stockholders are not being left out, however, in dishing out the prosperity pie: dividend payments are running at the annual rate of \$10 billion, the highest in history.

Consumer expenditures, which make up about two-thirds of gross national product, are widely expected to remain close to this peak level in the months ahead, thus indicating stability for general business activity.

The year-to-year gain in retail trade continued to be more pronounced than that in personal income as credit buying continued to rise. Preliminary information indicated that the total volume of retail trade in September expanded more than seasonally to \$15.7 billion and topped the year ago level by about 10 per cent. The Midwest and the Pacific Coast States scored the best gains over the similar levels as they have done most this year.

The year-to-year gain of 8 per cent in total retail trade during the first nine months of 1955 would certainly be much smaller without the considerable rise in automobile sales. Shoppers last month continued to spend a smaller share of their incomes on soft goods than they did a year before. Heavy commitments for home mortgages and new cars (about two-thirds bought on credit) as well as near-record spending for household goods have cut into other spending areas.

However, some observers are anticipating a slight shifting in spending patterns in the months ahead. The clothing industry anticipates the best season since 1950. The sales volume of chain stores and mail-order houses, which usually reflect to a large extent the spending of modest-income families was up 12 per cent in August from the year ago level. This was a slightly larger gain than that for total retail trade. The latest survey of consumer finances by the Survey Research Center of the University of Michigan points to a continuation of the record buying tempo this Fall. Most retailers are laying in sizable stocks in anticipation of a new record in the holiday shopping season.

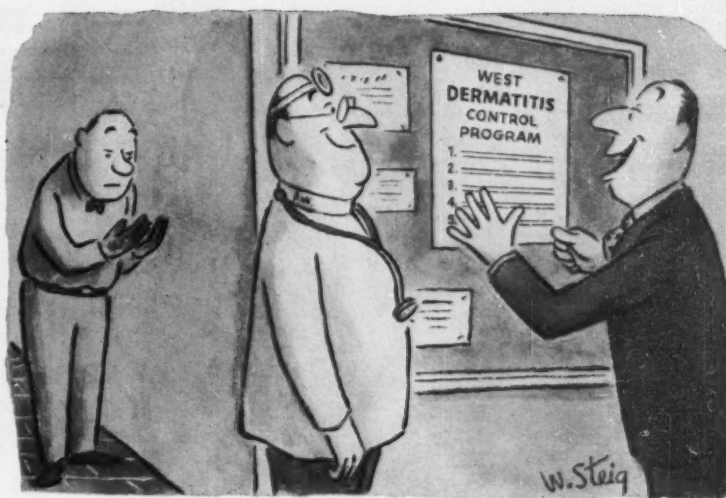
### Shelf Analysis

With the slight growth of inventories in recent months, some apprehension has begun to develop about possible future gluts. Inventory growth is somewhat alcoholic in its effects. A moderate amount is certainly stimulating while too much can be debilitating.

All present indications are that the current doses of inventory increase are quite modest. Manufacturers' inventories were about 65 per cent above sales in September compared with 85 per cent two years ago when many plants cut back their orders. The ratios for retailers and wholesalers are also quite encouraging.

The added market for many goods which develops during a period of inventory growth is expected to continue for the remainder of the year. The testing period may come after the turn of the year when business takes a long look at its inventory position following the holiday spending spree.

With sales rising in many lines, many businesses would like to add to their inventories. And every attempt to augment stocks leads to new orders which in turn breaks down resistance to other inventory hikes. Inventories can go on growing year-after-year if the economy also expands enough to support the rise but past experience shows that inventory splurges, particularly in durable goods, leads the wide swings in business activity. New car inventories at 690,000 last month were about the only area of inventory apprehension.



"Doc, dermatitis control is simple as 1-2-3-4-5."

An exaggeration?

Not at all. Occupational skin irritation can be prevented. Simply. Inexpensively.

—with the WEST Dermatitis Prevention and Control Program that:

- 1—insures personal cleanliness
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WORKERS free of skin irritation can save you hundreds, perhaps thousands, of dollars each year — by eliminating the cost of:

- medical treatment
- enforced idleness
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THE WEST Program for controlling skin irritations is based on individual shop requirements and an in-your-shop survey, made without obligation. Let a WEST representative plan the details.

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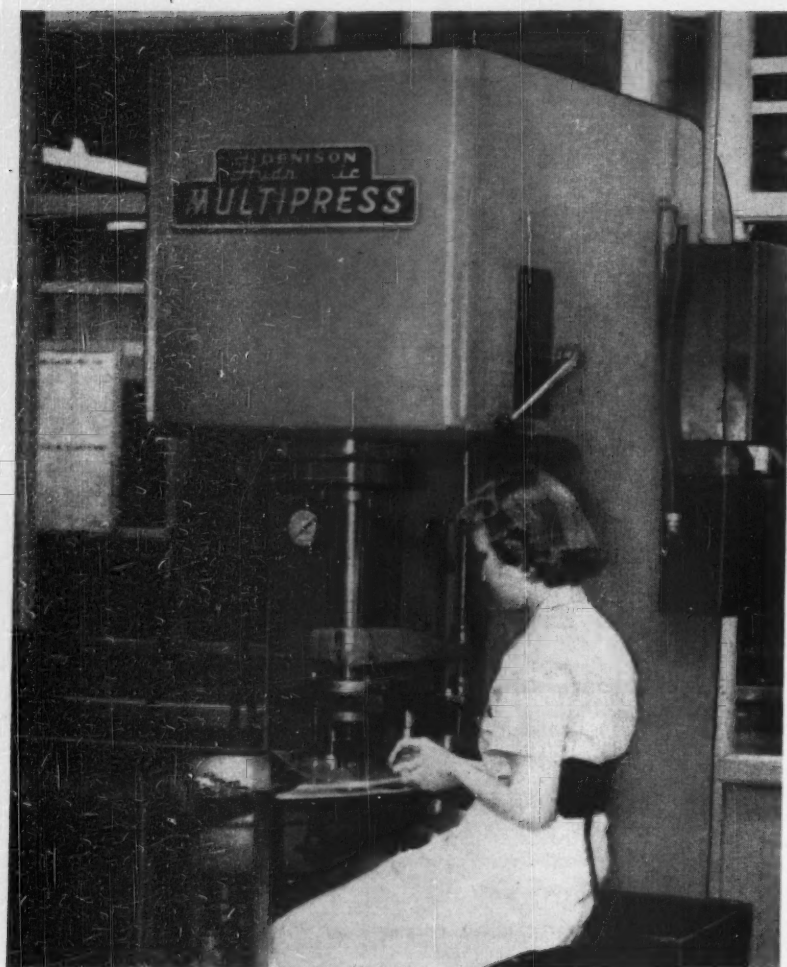
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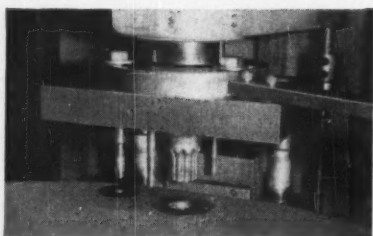


## Coins and sizes powder metal pinions with **DENISON MULTIPRESS®**

Powder metal and Denison hydraulic Multipress enable The National Cash Register Co., Dayton, Ohio, to make small pinion gears more accurately, yet faster than before.

Using powder metal, pinions are now made in only 12 operations where formerly 22 operations were needed. One stroke of the hydraulic Multipress smooths, burnishes and strengthens the sintered surfaces. The operator has only to load pieces on the Denison Dial Feed Accessory which indexes them into position under the ram.

The Denison hydraulic Multipress improves production efficiency on countless



*Multipress and Dial Feed Accessory show coining punch ready to press powder metal component through die for sizing and coining.*

applications where powder metal is used. Have a Denison Hydraulic Engineer study your operations and show where Denison can save you money. Write . . .

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HYDRAULIC PRESSES  
PUMPS • MOTORS • CONTROLS



The growing tightness of credit has not yet reflected in the data on construction which continued close to peak levels during August. New housing starts turned upward again in August and continued high in September.

### Failures Rise

Business failures, after a two-month decline, edged up slightly to 888 in August. The toll was 3 per cent lower, however, than in August 1954 when a post-war peak of 912 was established for the month. September failures remained above 1954.

Although the number of failures turned up a little, the annual failure rate per 10,000 enterprises listed in the Dun & Bradstreet Reference Book, as seasonally adjusted in DUN'S FAILURE INDEX, dipped to 41.6 in August from 42.0 in the previous month. A year ago, 44 businesses succumbed per 10,000, while the pre-war rate was 71 in August, 1940.

Concerns in their first five years of operation continued to predominate, comprising 60 per cent of the

total August casualties. A little over 20 per cent were begun in 1954.

Trade and construction accounted for the month's increase. Construction casualties were the heaviest since March, 1954. In wholesal-

#### FAILURES BY DIVISIONS OF INDUSTRY

(Current liabilities in millions of dollars)	Number 8 Months 1955	Liabilities 8 Months 1955	Number 8 Months 1954	Liabilities 8 Months 1954
MINING, MANUFACTURING...	1467	1557	110.1	126.9
Mining—Coal, Oil, Misc...	40	34	3.3	6.5
Food and Kindred Products	110	118	11.2	13.1
Textile Products, Apparel...	335	377	16.0	20.2
Lumber, Lumber Products	206	225	8.6	11.1
Paper, Printing, Publishing	70	88	2.8	7.6
Chemicals, Allied Products	36	57	3.0	4.7
Leather, Leather Products	59	71	3.3	4.0
Stone, Clay, Glass Products	36	39	1.5	1.1
Iron, Steel, and Products	80	77	9.3	8.3
Machinery	195	198	28.9	33.1
Transportation Equipment	37	37	3.8	4.4
Miscellaneous	263	236	18.4	12.5
WHOLESALE TRADE	792	744	32.2	36.2
Food and Farm Products	198	193	8.7	9.2
Apparel	43	32	1.5	0.8
Dry Goods	32	43	1.0	2.0
Lumber, Bldg. Mats. Hdwre.	93	70	4.8	3.4
Chemicals and Drugs	22	29	0.7	0.6
Motor Vehicles, Equipment	47	41	1.1	1.5
Miscellaneous	357	336	14.4	18.6
RETAIL TRADE	3670	3768	80.4	102.8
Food and Liquor	716	660	12.0	9.5
General Merchandise	133	128	4.1	5.4
Apparel and Accessories	584	569	11.2	11.0
Furniture, Furnishings	523	677	15.5	34.8
Lumber, Bldg. Mats. Hdwre.	205	211	5.9	6.0
Automotive Group	351	403	7.8	14.3
Eating, Drinking Places	668	662	14.0	12.7
Drug Stores	93	108	2.0	2.1
Miscellaneous	397	350	7.8	7.0
CONSTRUCTION	885	868	53.1	33.8
General Bldg. Contractors	284	304	27.0	17.1
Building Subcontractors	553	527	20.0	14.9
Other Contractors	48	37	6.1	1.7
COMMERCIAL SERVICE	561	609	21.3	22.5
TOTAL UNITED STATES	7375	7546	297.1	322.1

Liabilities are rounded to the nearest million; they do not necessarily add to totals.



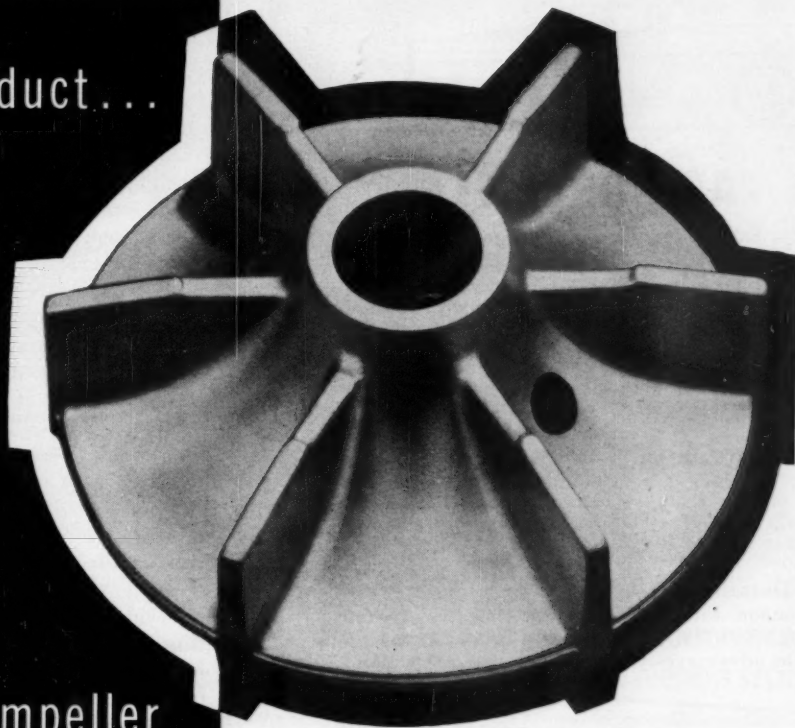
## SHIP IN CARTONS?

Here's a way to address them that puts less modern methods to shame. Inexpensive, paper stencil is cut on a type-writer—separately or as by-product of shipping paperwork. It's then attached to small handprinter to imprint addresses directly on containers within "label frames" that have been preprinted on the cartons by the carton manufacturer. Fast, clean, very inexpensive. Write for full details on the Weber Direct-To-Container Addressing System.

## Weber

Weber Marking Systems  
Div. of Weber Addressing Machine Co.  
Dept. 3-J  
Mount Prospect, Illinois  
Phone: CLearbrook 3-2405

another case where  
**MUELLER BRASS CO.**  
**FORGINGS**  
improve a product...



diesel engine  
water pump impeller  
forged of "603" **HIGH STRENGTH BRONZE**

Formerly produced as sand castings, these impellers now give better results because they're forged from "603" high strength bronze by the Mueller Brass Co. Said to be "right for the job and far superior to the old cast impellers", these forgings bring greater efficiency and longer life to the diesel engine water pumps in which they are installed. This tough "600" series alloy is readily forgeable, possesses remarkable resistance to corrosion, and has fine bearing qualities. Uniformity is excellent, due to the closer dimensional control of the forging process, and surface finish is noticeably smoother. This is another case where Mueller Brass Co. forgings have greatly improved a product . . . why not let our engineers show you the many advantages of using forgings.



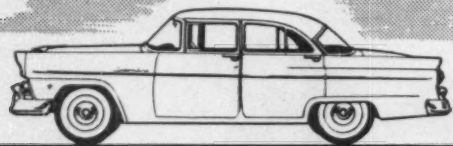
**MUELLER BRASS CO.**

PORT HURON 46, MICHIGAN



# You can LEASE NEW CARS from ROBINSON AUTO RENTAL

DIVISION OF THE HERTZ CORPORATION



## TEN CARS OR A FLEET

For Your Executives, Field Men, Salesmen, etc.

It will pay you to investigate the Robinson Auto Rental Plan! For Robinson, with 25 years' experience serving large and small businesses, can provide you with efficient automobile lease service anywhere, at reasonable cost. You can lease as few as ten cars or an entire fleet. You will be relieved of numerous "headaches" of car ownership and maintenance... you will have no capital tied up... your cars will be a credit to your representatives, and to your business.

### No Capital Investment

Hundreds of businesses throughout the United States profitably use car rental as the answer to their automobile personnel problems. They find it far easier, more convenient to lease cars from Robinson for their executives, field men, salesmen, etc.

### Get Full Details

Send the coupon, without the slightest obligation, for full information about the Robinson Auto Rental Plan. Learn all the advantages you can enjoy under this plan.

## HUNDREDS OF BUSINESSES NOW ENJOY THESE GREAT ADVANTAGES

- **New Cars at Regular Intervals**  
Brand new, current model cars delivered at the most convenient times and places.
- **All Repairs**  
With Robinson paying the bills.
- **Towing and Lubrication**  
With Robinson paying the bills.
- **Tires Repaired and Replaced**  
Top quality tires the year around. Snow tires in winter; regular treads in summer.
- **Complete Winter Servicing**  
With Robinson paying the bills.
- **License Plates**  
And everything else needed to comply with local laws.
- **Insurance**  
Fire, Theft, \$50 deductible collision, plus prompt replacement of out-of-service cars.
- **Destroyed Cars Replaced**  
Promptly, with a minimum loss of time.
- **Unrestricted Mileage**  
For both business and pleasure.
- **All These Plus...**  
No bookkeeping problems, no capital tied up in automobiles, greater good-will for your business, and happier personnel driving current model, clean, smart, dependable cars.

## ROBINSON AUTO RENTAL

Division of The Hertz Corporation

### SEND THIS COUPON!

To: Mr. Hubert Ryan, Vice President, Robinson Auto Rental, Division of The Hertz Corporation, 229 South Hanson St., Philadelphia 39, Pa. Please rush information on how I can save capital with the ROBINSON AUTO RENTAL PLAN.

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_  
The number of cars we operate is \_\_\_\_\_

ing, the rise occurred largely in the food trade; in retailing, it was primarily in apparel and general merchandise, although the toll in the automotive group edged up to the highest level so far this year. Manufacturing mortality fell to a four-month low, with most of the decline in the food and lumber-furniture industries, and commercial service to an eleven-month low.

In most manufacturing industries, mortality was even with last year or dipped lower. Contrary to this trend, casualties among textile and apparel manufacturers rose slightly above August a year ago.

All geographic regions reported small increases in failures in August, except the Middle Atlantic and Pacific States. In the former area, casualties were the lowest this year, with both New York and New Jersey tolls down, while Pacific failures were the lowest in ten months, with all of August decline concentrated in California. Failures in the South Atlantic States have reached the highest level since June 1954. Mixed trends from 1954 appeared; four regions had declines and five increases. Mortality was down notably from a year ago in the Middle Atlantic and Mountain States while it climbed considerably in the East and West North Central States. Illinois, Wisconsin, and Minnesota accounted principally for the latter upturns.

### THE FAILURE RECORD

	Aug. 1955	July 1955	Aug. 1954	P.C. Chg.†
DUN'S FAILURE INDEX*				
Unadjusted	37.4	39.1	40.1	-7
Adjusted, seasonally	41.6	42.0	44.1	-6
NUMBER OF FAILURES	888	861	912	-3
NUMBER BY SIZE OF DEBT				
Under \$5,000	157	149	138	+14
\$5,000-\$25,000	431	420	472	-9
\$25,000-\$100,000	223	232	232	-4
\$100,000 and over	77	60	70	+10
NUMBER BY INDUSTRY GROUPS				
Manufacturing	158	179	187	-16
Wholesale Trade	107	89	94	+14
Retail Trade	430	423	451	-5
Construction	134	102	100	+34
Commercial Service	59	68	80	-26

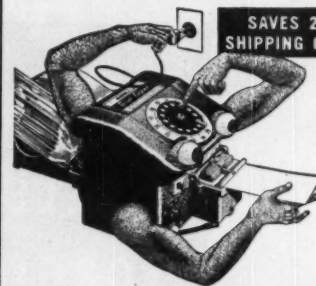
(LIABILITIES in thousands)

CURRENT	\$36,028	\$32,543	\$32,582	+11
TOTAL	36,425	32,706	32,712	+11

\*Apparent annual failures per 10,000 listed enterprises, formerly called DUN'S INSOLVENCY INDEX.  
†Per cent change, August 1955 from August 1954.

BUSINESS FAILURES includes those businesses that ceased operations following assignment or bankruptcy; ceased with loss to creditors after such actions as execution, foreclosure, or attachment; voluntarily withdrew leaving unpaid obligations; were involved in court actions such as receivership, reorganization, or arrangement; or voluntarily compromised with creditors out of court.

CURRENT LIABILITIES, as used in the Failure Record, have a special meaning; they include all accounts and notes payable and all obligations, whether in secured form or not, known to be held by banks, officers, affiliated companies, supplying companies, or the Government. They do not include long-term, publicly held obligations. Offsetting assets are not taken into account.



SAVES 25%  
SHIPPING COSTS

## ELECTRIFIED MARSHIAN CLEANS UP MAYTAG SHIPPING PROBLEM

All Maytag Washer shipments come clean, since installation of MARSH ELECTRIC Dial-Tapers. It's simple to operate. You dial any tape length desired. In a split second, tape is measured accurately, moistened with thermostat-controlled warm water, cut off clean, and practically handed to you. There's No guesswork; No lever to pull; and No wasted tape. Users save up to 25% in tape... 50% in time, compared with manual tape machines.

FREE: "The Marshian Story" of Electric Taping. Clip ad to business letterhead with your name. Mail Today! MARSH STENCIL MACHINE COMPANY, 62 Marsh Building, Belleville, Illinois U. S. A. DT-18

**MARSH** ELECTRIC  
DIAL TAPER

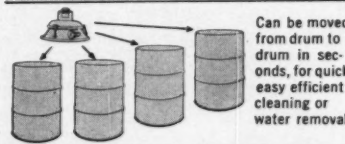
## New! Wet and Dry Vacuum WITH TRANSFERABLE HEAD fits any 55 gallon drum



Hospital quiet  
operation with  
convenient  
inside bag.

**HILD**

PORTABLE! 4-wheel dolly available for easy moving.  
ECONOMICAL! Fits any 55 gallon drum!  
LIGHTWEIGHT! Transferable motor unit is easily  
lifted from one drum to another.



Can be moved  
from drum to  
drum in sec-  
onds, for quick,  
easy efficient  
cleaning or  
water removal.

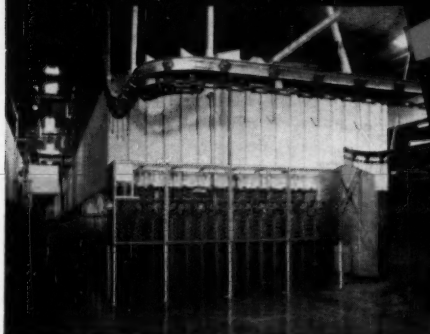
**HILD FLOOR MACHINE COMPANY**  
740 W. WASHINGTON BLVD., CHICAGO, ILL.  
Please send me FREE details on the Wet and Dry  
Vacuum Cleaner with transferable vacuum head.

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

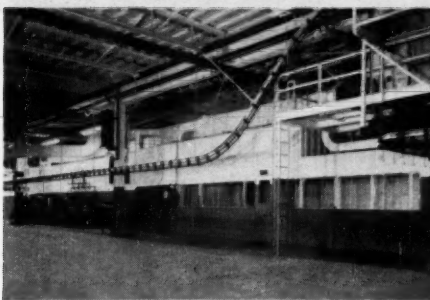
DR-10-55

# COMPLETE *Finishing* SYSTEMS

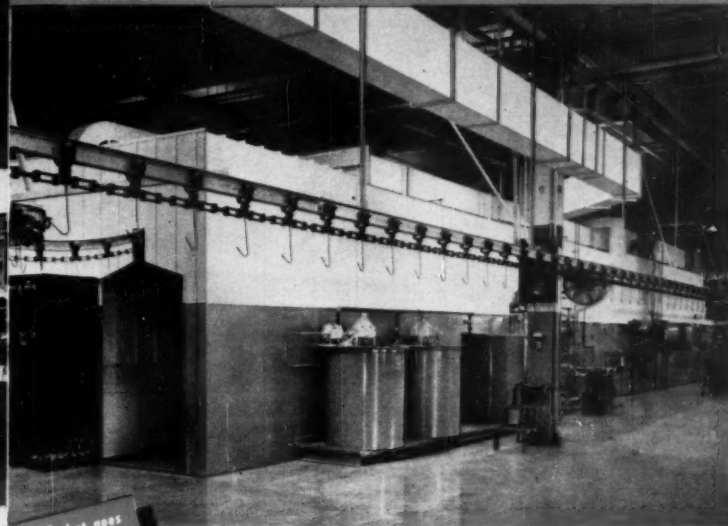
... for ENAMELS • LACQUER • PAINT • VARNISH



Exterior view of Ventilated Active Drip Zone. Clean, Filtered Air is Supplied to this enclosure. Fume-laden air is exhausted.



View showing glass in one side of Inactive Drip Zone where parts may be seen prior to entering Baking Oven.

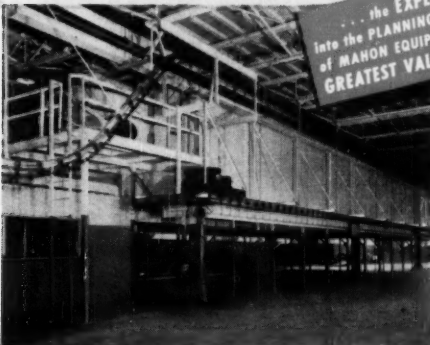


View of Mahon Flow-Coating Equipment at Chrysler Corporation of Canada, Limited. This is part of a Complete Mahon Finishing System for Coating Black Enamel Parts.

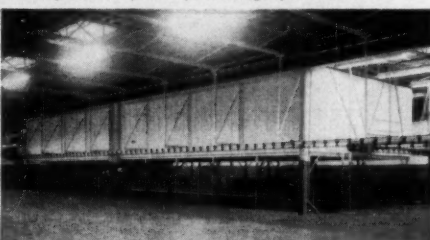
... the EXPERIENCE that goes into the PLANNING and ENGINEERING of MAHON EQUIPMENT is the item of GREATEST VALUE to YOU!

## Black Enamel Parts at CHRYSLER CORPORATION of CANADA, LIMITED, are FLOW-COATED in MAHON FINISHING SYSTEM!

In addition to the body finishing system at the Windsor plant of Chrysler Corporation of Canada, Limited, Mahon also installed a complete finishing system for black enamel parts. This is a Flow-Coating System which includes a Mahon Flow-Coating Machine, a Ventilated Active Drip Zone, a Ventilated Inactive Drip Zone, and a 450° Finish Baking Oven with storage space below. Two Enamel Mixing Tanks and a Solvent Tank are provided outside the enclosure. The recirculating unit is equipped to automatically maintain the enamel at a specific temperature in the Flow-Coating Chamber. This is a typical Mahon Flow-Coating System, complete in every detail—automatic from start to stop. If you have a finishing problem, or are contemplating new finishing equipment, you will find that Mahon engineers are better qualified to advise you on both methods and equipment requirements... and better qualified to do the all-important planning and engineering of equipment—which is the key to fine finishes at minimum cost. Whether your job is to be Flow-Coated, Dip-Coated, or Spray Painted either Manually or by Electrostatic Process, you will find that Mahon equipment will serve you better, because it is engineered better and built better for more economical operation over a longer period of time. Mahon will do a complete job for you on one contract—undivided responsibility for the entire system insures proper coordination and safeguards you against complications which can upset your production schedules. See Mahon's Insert in Sweet's Plant Engineering File, or write for Catalog A-656.



View of Mahon 450° Enamel Baking Oven. Oven is built against ceiling trusses to provide parts storage space below.



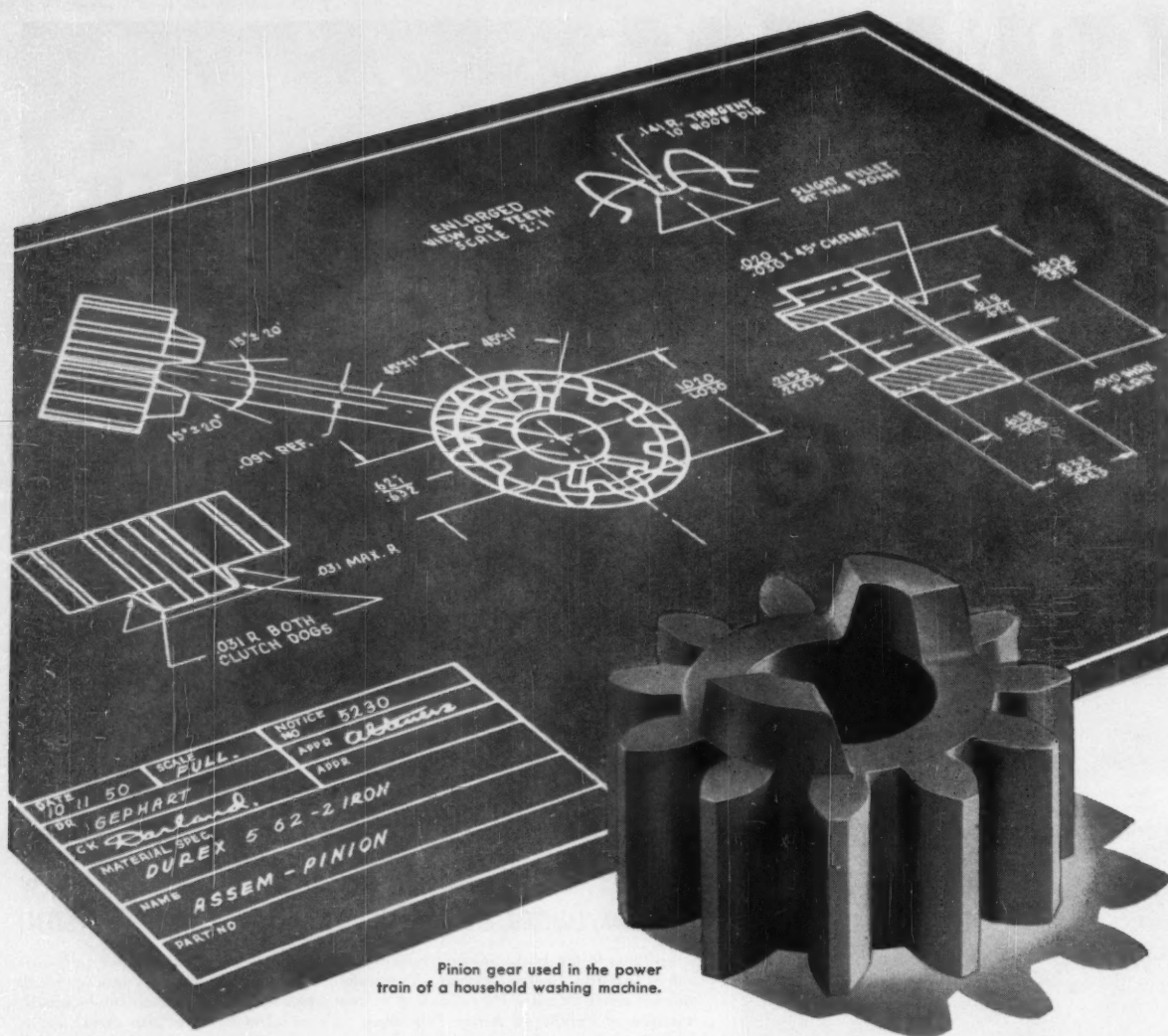
Another view of the Enamel Baking Oven. Finish is baked for 20 minutes at 450° in this 80 Ft. x 24 Ft. Mahon Oven.

THE R. C. MAHON COMPANY • Detroit 34, Michigan  
SALES ENGINEERING OFFICES in NEW YORK AND CHICAGO

Engineers and Manufacturers of Complete Finishing Systems—including Metal Cleaning, Pickling, and Rust Proofing Equipment, Hydro-Filter Spray Booths, Dip and Flow Coaters, Filtered Air Supply Systems, Drying and Baking Ovens, Cooling Tunnels, Heat Treating and Quenching Equipment for Aluminum and Magnesium, and other Units of Special Production Equipment.

# MAHON





## MORaine METAL POWDER PARTS SOLVE MANY PRODUCTION PROBLEMS

Here you see a complex design that is being mass-produced today by metal powder techniques *with important savings in cost.*

The print in the background indicates the intricacy of the design, while the photograph in the foreground shows the part ready to be assembled into the final mechanism. And from raw material to what you see here took only *one press operation!*

This demonstrates what has come to be expected through cooperation between customer and Moraine.

Moraine's experience with metal powder is called upon almost daily to resolve complex designs into economical production jobs—just as Moraine almost daily contributes to modern industry by improving product performance and lowering costs.



**moraine  
products**

DIVISION OF GENERAL MOTORS, DAYTON, OHIO

**METAL  
POWDER  
PARTS**

# HIGHLIGHTS & sidelights

comment by Hroesta R. Gardner

## Sun power on the line

When our satellite takes off for the upper stratosphere, solar batteries may well be aboard, to power its instruments. But that shouldn't surprise residents of Americus, Ga. They're talking by solar energy now—something hardly imagined a few years ago.

That's how fast the solar energy field is moving.

Announced less than two years ago (see July 1954, page 36), the Bell Telephone Laboratories solar battery already compares favorably in efficiency with steam and gasoline engines. The picture below shows how it is set up as a power source for rural telephone terminal equipment.

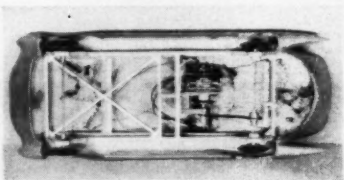
This battery uses silicon metal as the energy-converter; but other materials are being pressed into service as well. General Motors used selenium photoelectric cells in the model automobile it built for its "power for Progress" show (photographs right). Others are working with cadmium sulfide.

Practical use of sun power, our inexhaustible energy source, may be closer than many think.

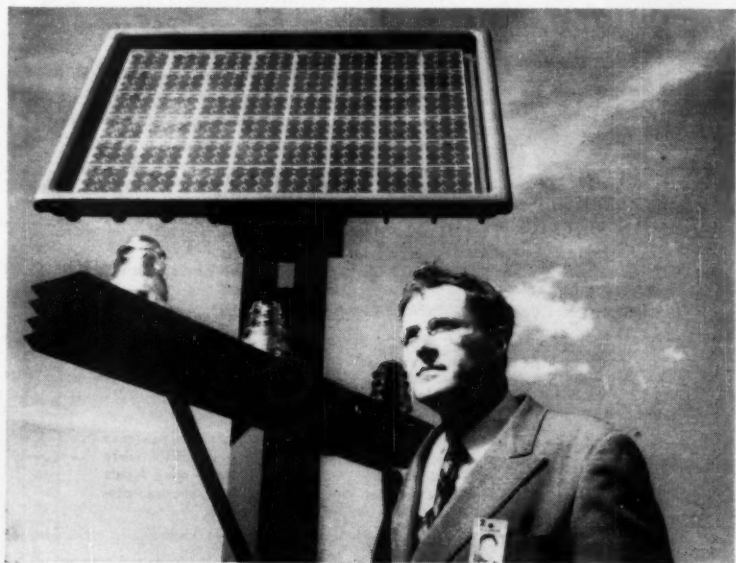
## Watch out for the jam

Radio interference, once just an annoyance, is becoming a broad industrial problem.

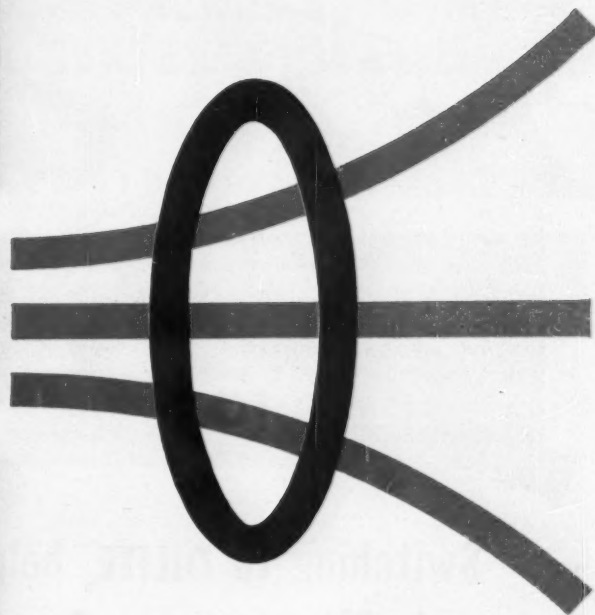
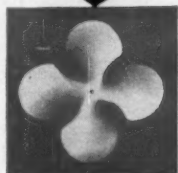
Complaints to the FCC reveal, for instance, that a heater in a plywood plant in Tennessee jammed commercial aircraft communications on a route 500 miles away. An ordinary machine tool can throw a big electronic computer out of whack. And, in wartime, radiated interference can reveal the location of vital installations, and jam essen-



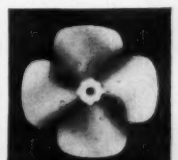
Toy-sized "sunmobile" is used by GM to show how photoelectric cells (mounted on top surfaces) can convert sunlight into useful power.



Solar battery is mounted on telephone pole to supply power to terminal equipment. Discs of silicon metal serve as solar energy converters.



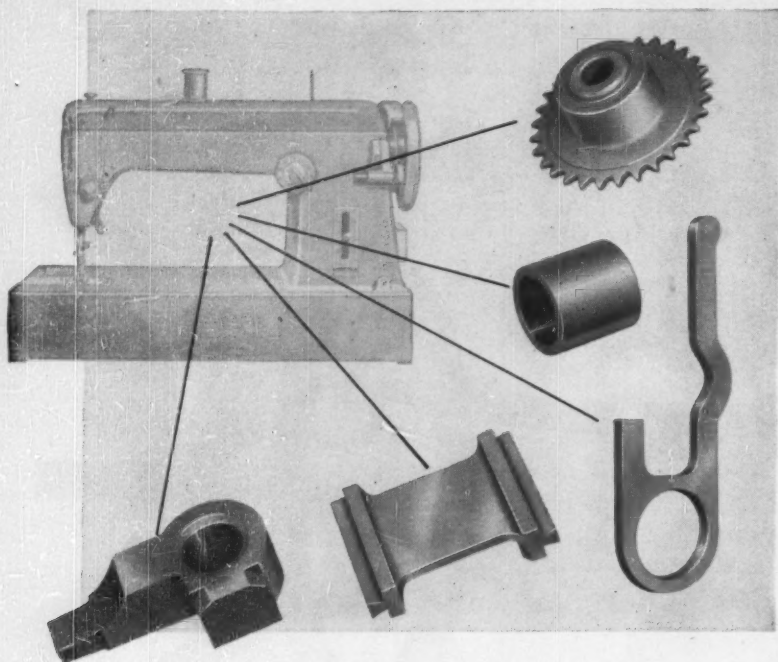
No air-moving  
appliance can be better  
than its most  
vital component: the  
air-impeller. And no one has  
had more experience in  
the design and manufacture  
of air impellers  
than Torrington.



THE  
**TORRINGTON**  
MANUFACTURING COMPANY  
TORRINGTON, CONNECTICUT  
VAN NUYS, CALIFORNIA · OAKVILLE, ONTARIO



## IN POWDER METALLURGY...IT'S AMPLEX



## Switching to OILITE® helps Make this Manufacturer Competitive

Price competition and rising production costs caused one sewing machine manufacturer to re-examine his component parts to determine how costs could be lowered while maintaining high quality standards.

Super OILITE and IM Iron OILITE provided the answer. Many parts, including gears, eccentrics and sprockets, were re-designed for production in these high-strength materials. Formed in automatic presses in seconds, these OILITE parts have reduced costs substantially by eliminating costly machining operations . . . and high quality is maintained.

The conversion provided another benefit. Certain parts were designed to take advantage of the self-lubricating qualities available in some OILITE materials.

Let Amplex help you with your parts problems. The Chrysler-Amplex engineering facilities, unmatched in the powder metal industry, are ready to serve you. Call or write today.

### CHRYSLER — AMPLEX PRODUCTS

OILITE Bearings      Finished Machine Parts  
Permanent Metal Filters      Friction Units

#### IT'S NEW! IT'S FREE!

First complete information on powder metal bearings, finished machine parts, filters and special parts. 48 pgs. Write today for OILITE Engineering Manual E-55.



Only Chrysler makes OILITE

**CHRYSLER CORP. • AMPLEX DIVISION**  
Dept. W-10      Detroit 31, Mich.  
Overseas Distribution • Chrysler Export

tial communications networks.

No wonder the FCC is becoming increasingly concerned about the problem, and military agencies are establishing radio interference standards for electrified machines, requiring that any motor, switch, fluorescent light, or control device that operates for more than one second in every three minutes be designed to be interference-free.

Well aware of the situation, electrical equipment suppliers are helping to focus attention on it, too. Two of the talks at the last Westinghouse Machine Tool Electrification Forum, for instance, dealt with this topic, and gave an excellent review of problems and design principles.

If you haven't yet assigned an engineer to look into the problem, it would be a good idea to do so.

### Only skin deep?

Skin irritations may not seem very important, but they account for about two-thirds of all occupational illness and they cost industry well over a hundred million dollars a year.

Almost no industry is completely

free of skin irritants—or of especially sensitive people. Candy, steel, rubber, glass, textiles, shoes, and automobiles all involve use of materials that can cause severe skin irritation in sensitive individuals.

Recognizing the scope of the problem, and industry's need for information on the causes and cures of occupational skin disease, the Association of American Soap & Glycerine Producers has sponsored publication of a definitive booklet on the subject: *The prevention of Occupational Skin Diseases*, written by Dr. Louis Schwartz, nationally-recognized authority. It's worth reading. Single copies of the booklet are free from the Association. The address: Cleanliness Bureau, Association of American Soap & Glycerine Producers, 295 Madison Ave., New York 17, N. Y.

### Names confirmed

It's now official: Elements 99 and 100 are to be known as *Einsteinium* and *Fermium* (see September, page 36). That makes to-day's score 101 elements isolated and 101 elements named.

## Cut 1/3 in truck miles



### MEANDERING DELIVERIES

Route your trucks the **SHORTEST WAY** every trip. The time and gas used by your drivers looking for unknown streets will buy a hundred maps like Hearne's Street Map of your city and county area.

Printed in six colors; street names are in big, black type, and instantly spotted with Hearne's patented, automatic Street Finder. (See border)

Over 100,000 truck owners use Hearne maps every day to give customers better service and cut truck mileage. Many users claim they save the cost of the map in a single day's use.

### HEARNE BROTHERS

America's Largest Manufacturers of Commercial and School Maps

25th Floor National Bank Bldg., Detroit 26, Mich.

44" by 65" wall maps of any American city, \$42.50 each F.O.B. your office.

44" by 65" wall maps of any American county, \$42.50 each F.O.B. your office.

44" by 65" wall maps of any state in the Union, \$42.50 each F.O.B. your office.

If in your operation you use salesmen, our city-county street maps might save your men considerable time. Test after test conclusively proves that this type personnel will make more calls more often if you make it convenient. Our city-county street maps locate instantly and mechanically for your salesmen, any street address in any American city. We will promptly mail one of your secretaries a brochure.



*The kids are getting smarter  
—and so is industry*

Industry needs skilled, quality-conscious workers, and it's beginning to recognize that the best way to get them is to start with the kids—to develop in them an appreciation of industrial skills. That's what makes Ford Motor Company's Industrial Arts Awards program noteworthy and newsworthy. Working with secondary school vo-

cational training instructors, Ford has established awards in fifteen categories (metal, plastics, electrical equipment, and so on). The results wondrous to behold. This year's winners included the working model pictured here, an electric steel furnace. It was made by the young man sitting beside it, a Pittsburgh high school student.



**IF YOUR FIRM  
OPERATES  
ITS OWN TRUCKS...**

## Tachographs

**help make your  
drivers more efficient**

The Tachograph is a recording speedometer for trucks. It permanently records on a wax-coated chart when truck started, when it stopped, when it idled, speed and distance traveled.

While good drivers can be commended, a supervisor can correct a poor driver's road habits... habits that wear out trucks and tires sooner, wastefully consume gas and oil and cause accidents.

**Wagner Electric Corporation** 6439 Plymouth Ave., St. Louis 14, Mo.

Please send a copy of Bulletin SU-3.

Name and Position \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_  
We operate \_\_\_\_\_ Vehicles

555-B

**TACHOGRAPH**  
the recording  
speedometer  
Distributed only by  
**WAGNER ELECTRIC  
CORPORATION**

Many drivers will tell you a Tachograph is the best friend a driver can have. In numerous instances, drivers have been acquitted of speeding charges, hit-and-run and reckless driving because their Tachographs proved they couldn't have been guilty.

Send this coupon today and learn more about how the Tachograph can help you make your trucking operation safer, more profitable, more efficient.

# Geared TO MEET INDUSTRIES' DEMAND FOR HIGH QUALITY CONVEYING MACHINERY



New office and engineering building, completed early in 1955. Part of an extensive program of expansion of the engineering and manufacturing facilities at the Ellwood City, Pennsylvania, plant.

Whatever the conveying problem might be — whether it involves the handling of a few pounds or many tons — **Mathews** builds the equipment to do the job. You can be sure of this service, from proposition through installation, when you buy **Mathews Conveyers**. And, of course, you get the benefit of **fifty years' experience** in continuous flow material handling.



1905-1955

Engineering Offices or Sales Agencies in Principal American and Canadian Cities  
Export Representative—Foreign Trade Division of New York Hanseatic Corporation

**GENERAL OFFICES . . . ELLWOOD CITY, PENNSYLVANIA**  
**PACIFIC COAST DIV., MATHEWS CONVEYER COMPANY WEST COAST,**  
**SAN CARLOS, CALIFORNIA**  
**CANADIAN DIVISION . . . MATHEWS CONVEYER COMPANY, LTD.**  
**PORT HOPE, ONTARIO**

# MATHEWS







ARCHIVES BUILDING, WASHINGTON, D. C.—GENDREAU PHOTOGRAPH

THE MARKS OF LEADERSHIP ARE QUICKLY RECOGNIZED, BUT WHAT THEY STAND FOR IS HARD TO DUPLICATE. THE EFFORTS TO EMULATE THE LEADERS IN A COMPETITIVE ECONOMY RESULTS IN A CONSTANT SEARCH FOR NEW PATHS TO LEADERSHIP. FOR THOSE NOT SATISFIED WITH MERE SUCCESS, FOR THOSE WHO ASPIRE TO BE LEADERS IN THEIR FIELD, HERE ARE THE PATHS THAT LEAD TO THE TOP.

## Paths to Leadership

LEON C. STOWELL

*Chairman of the Board, Underwood Corporation*

WITHIN OUR highly competitive business community one of the recognized goals of every company is to be a leader in its industry. In seeking to fulfill this objective, there is always a pattern to the success which any company achieves. To-day, as we at Underwood strive to carve out a whole new area of leadership, both our program of the past and the path ahead have an interesting pattern.

Just what is the leadership of an industry and how is it measured? Is it represented by the company with the greatest capital assets? Is it vested in the one with the greatest sales figures? the greatest profits? Do square feet of manufacturing area enter into the determination of leadership? Is the size of the sales force, or the number of manufacturing personnel, a factor?

It seems to me that some of these considerations are more concerned with the relative success of a company rather than with leadership. Success is a requisite of leadership, of course; obviously an industry's leading companies must be successful in sales and in profits. But a concern which successfully exploits sales and profits does not *ipso facto* fulfill the rôle of leadership in the industry.

It is my belief that the real yardstick of leadership is far less tangible than quarterly

earnings figures. Sales volume and net profit may be some help in gauging leadership, but only insofar as they realistically reflect the opinion of the industry's public. For the real measure of leadership can only be the determination by that public of the most satisfactory products of the industry. What, in effect, is the judgment of the buying public? That, in my opinion, is the true judgment of leadership.

Success in the business world can be a transient thing. It can linger, take root and thrive, and thus serve for many companies to widen the path to leadership. Success can be attained swiftly or slowly. It can blossom only momentarily and then wither away.

The quality of leadership, on the other hand, transcends the relative successes of companies. Notoriously fickle at times, the public will show considerable loyalty when it is soundly based on satisfying experience. Its judgment may be the result of lengthy consideration, it may come over-night. But once the goal of leadership is awarded, rarely is it ever withdrawn—so long as the leader accepts responsibility for forward-looking development and growth.

The seeds of leadership usually are first planted by the development of a product that not only fills a great need, but also attracts

recognition because of the care, skill, and excellence of materials put into its manufacture. This leadership blossoms into full flower when the product becomes universally accepted and the name becomes a byword for quality in the field.

This was the path we entered some 60 years ago with the introduction of the first front stroke visible writing machine. How well we followed this path to leadership was evidenced by the position of respect awarded Underwood in the writing machine field by typists and management. The name was almost synonymous with the word "typewriter."

Many companies in other fields have experienced this same kind of acceptance. The list of such companies would inevitably include names that have gained such wide acceptance that they are frequently used as generic terms to signify a group of similar, competing products. While this use of a name is not always condoned, it is a clear indication of the acceptance of the company as a leader in its field.

But leadership, once gained, does not go unchallenged. It can be maintained by developing and improving the quality of the product, but even this has its limit as the product approaches perfection. Competitors are able to duplicate much that the leader has done and those who



rest on their laurels may find those laurels threatened. Some companies succumb to energetic competition; many thrive on it. Although some 600 typewriter companies have clattered across this earth, only a few have survived. We, like other successful companies, found that there were other paths to leadership.

Product development would seem to be almost a "natural" phase in the growth of a leading company, particularly as competition closes the range. Often product development represents a company's response to a demand by the public. Corporate leaders must keep close check to sense this will of the public and be quick to respond to it. How successful the product development proves to be will often depend upon the ease and accuracy with which the public's demand is learned and interpreted, and upon the ability and integrity with which the product is developed.

### Response to Demand

Thus, in the early 1900's there came an increasing demand for a commercially practical typewriter that would be small and light enough to be carried easily. In this case there was little difficulty in achieving the first step in the pattern, of learning and interpreting the public's want. Both Underwood and its competitors were keen to it. But the maintenance of superior research and development facilities, so essential to the leadership of growing enterprise, paid off. In 1919 we introduced the first successful portable typewriter.

In most industries in America there is segmentation, with each part or facet of the industry offering rewards to the enterprising. Leadership within one part of the industry often gives birth to product development of another kind:

expansions into other parts of the industry. In effect what we know to-day as diversification of the simplest kind is the next logical step in the pattern of leadership. Careful analysis of the several segments of the industry can reveal which may be most naturally suitable to one's available research, production and marketing structure.

### Product Development

In our case the first step toward diversification was taken in 1907 when management appraised the still young business machine industry and spotted the area for its move. The result was the Underwood Computing Machine Company, a subsidiary which developed and marketed one of the first bookkeeping machines. As a start in diversification the effort was accomplished with no difficulty for the new product was, in essence, a typewriter combined with computing mechanisms. With entry into business offices paved by the reputation of typewriters, what more natural development could there be?

It is by means of one or both of these vehicles, then—product excellence and product development—that so many companies have pursued the goal of leadership. Essential to such a program, of course, is careful and thorough planning. Steps of development must be prepared, and the corporate structure molded to climb those steps.

Conversely each phase of the over-all plan must be sufficiently flexible to withstand crises such as war and depression, if a company is to maintain its course. In the event of such critical interruptions a company must be prepared to reef sail, if necessary, to withstand the storm. But sufficient momentum must be maintained to facilitate resuming its original course,

or even a superior one, once the crisis has passed.

Even with the best of such programming, however, all too many companies who follow the path of product excellence and product development ultimately may find themselves not progressing satisfactorily. Initially this may appear at such a level of success that there seems to be little cause for dissatisfaction. Eventually, however, the true limitations of the company's position may become apparent.

Commensurate with the engineering achievements of its time, a company's several products again may approach a level of perfection. The areas for continued growth cannot be predicated indefinitely on a few products of a few segments of the industry. In a dynamic economy such as ours a company with a limited range of products may be a declining company.

### Diversification

To overcome this obstacle there is the next design in the pattern: diversification. Here I mean not merely the simple diversification of the product development stage but diversification on a far more extensive level: the extension of product development along many segments of an industry. In our industrial history this diversification was extended and expansion again undertaken in 1927.

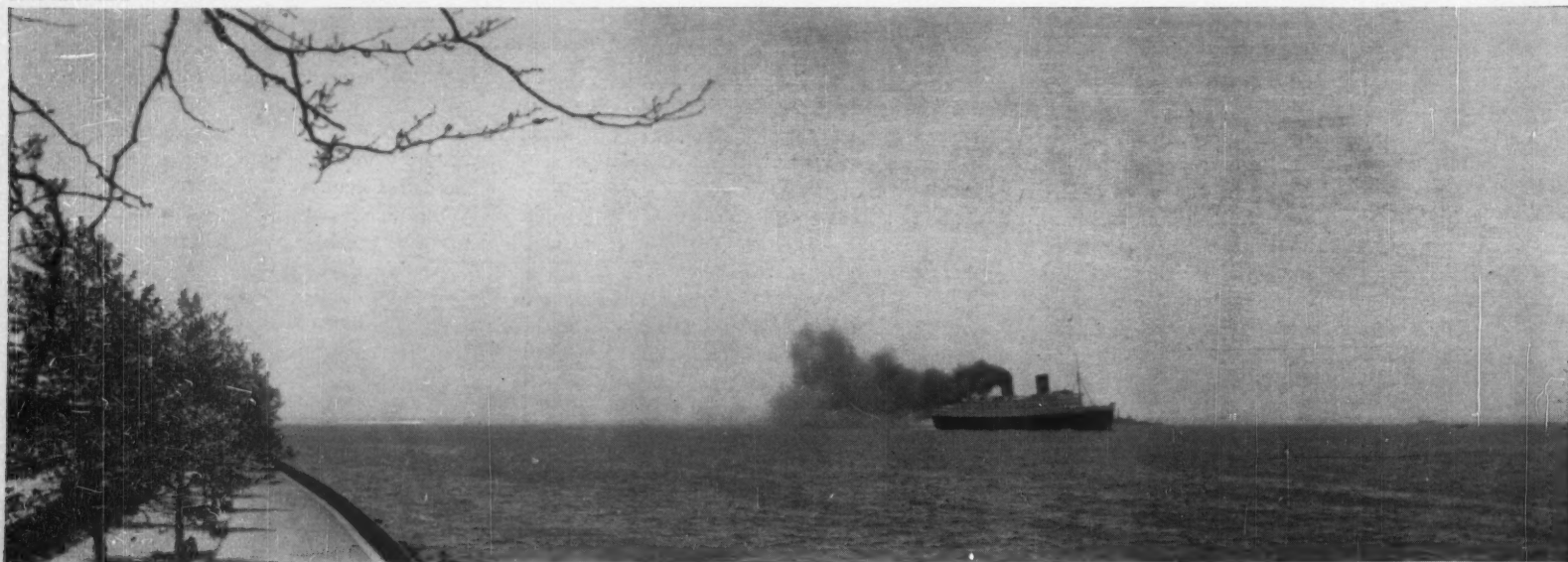
Paralleling the growth of Underwood, the Elliott-Fisher Company had developed its own paths of leadership. Well established as a manufacturer of book typewriters, accounting and billing machines, it had pursued its own policy of diversification in a broadened field of business machines. In 1926 Elliott-Fisher had purchased the Sundstrand Corporation, manufacturers of the first natural sequence ten-key adding machine for touch operation. This instrument proved as revolutionary to the world of numbers as the typewriter had proved to the world of letters.

To stimulate what was a more dynamic and

*Continued on page 116*

The majesty of leadership, as reflected in the Queen Elizabeth, rests on more than just success. While no record holder for trans-Atlantic crossings, she has found in the flowing lanes of the sea a path that leads to the recognition and acceptance which so often mark the leader. Success, no matter how hard-won, can be easily lost, but the laurels of the leader are usually more lasting. Who to-day, for instance, remembers the Pacific, a record holder of a hundred years ago in her trip across the Atlantic?

BOWE PHOTOGRAPH





*Seasonal Gifts: benefit or bother? How you handle them may make the difference, survey shows*

ALFRED G. LARKE  
*Employer Relations Editor*

**T**HERE'S good news tonight, folks: Santa Claus is not dead. He will ride again this Christmas Eve (or a few days earlier), leaving presents not only in the big stockings of little people, but in the nylon, wool, and cotton socks of a great many business people, as well.

Despite some rumblings from companies that find the business of corporate Christmas giving a nuisance, a source of embarrassment, or an expensive proposition, the majority of them, a survey shows, will be in there, giving, when Christmas 1955 rolls around.

And, if the business and industrial givers seem to favor past and prospective customers or others who have done them favors, as they confess, what of it? Even the real Santa is said to discriminate in favor of those who have been good during the past twelve months.

DUN'S REVIEW AND MODERN INDUSTRY questioned 1,000 executive officers of business and industrial concerns and found that over 59 per cent of the respondents give some kind of Christmas present to their business friends. The figure is, perhaps, even more impressive than it looks at first glance, because the group that was questioned represents a fair sample of American industry, which means it is made up, preponderantly, of the small companies. It was representative geographically, as well.

The respondents' comments, as well as the size of their companies, made it clear that few of them, if any, are buying Christmas presents out

of surplus profits that might otherwise have gone mostly for taxes. Their gifts are costing them good money as well as a lot of thought.

Here are the gift practises they reported:

Low-cost "remembrance" items .....	53%
Substantial personal gifts .....	32%
No gifts .....	41%

The total is more than 100 per cent because 26 per cent of the respondents give both low-cost, general-distribution gifts and the costlier

personal presents for special company friends.

Two thirds of the companies that do not give Christmas business gifts never have done so. The other one-third once pursued the policy, but have since abandoned it, for a variety of reasons. Of the companies that now give no Christmas gifts, none plans to change its policy. Of those who *do* give presents, about 17 per cent have some change in mind—for the most part, they indicate, a decrease in giving.

These two figures are of importance to the substantial number of companies that look on corporate gift-buying as a substantial part of their business and, in some cases, the difference between annual profit or loss. Few seem to quarrel with the general idea of business gifts. Any who have quit giving, or contemplate quitting, are moved to do so by the annoyances of choosing recipients without offending those who do not receive gifts, deciding who in the company may give how many or how expensive gifts, and the other worries that are involved.

The "gift industry," if the full-time manufacturers and sellers of "remembrance" items and the holiday-season salesmen of other products may so be designated, are not unaware of the problem.

One gradually increasing practise has been the donations of cash gifts to charities in the names of customers who might otherwise be sent company presents. This does the vendors of Christmas gifts no good, though it helps the charities.

#### **Why Gifts Are Given**

Participants in the DR&MI survey indicated the purpose of their giving in answers to three sets of questions: First:

<i>Have specific advantages in mind .....</i>	<i>71%</i>
<i>Custom pretty much just a habit .....</i>	<i>29%</i>

The "specific advantages" they had in mind broke down into three categories:

<i>Good will .....</i>	<i>56%</i>
<i>Appreciation of past orders .....</i>	<i>28%</i>
<i>Advertising .....</i>	<i>16%</i>

Finally, here are the accounts to which they charge Christmas gift costs:

<i>Advertising .....</i>	<i>46%</i>
<i>Selling .....</i>	<i>26%</i>
<i>Promotion .....</i>	<i>8%</i>
<i>Overhead and general expense .....</i>	<i>13%</i>
<i>Other .....</i>	<i>7%</i>



It appears, also, however, to involve as many problems as outright gift giving. Where one man may object to receiving a gift of value, lest it make him appear to be accepting a minor "bribe" for business favors, another may object to the charity that is benefitted in his name. The company that attempts to escape one problem by this means may, therefore, run into another problem just as difficult. I may like the Damon Runyon Cancer Fund, you may prefer the Sister Kenny Foundation. The man who wants to bestow a token of good will upon both of us will

### Who Holds the Reins?

Someone in the sales department—salesman to manager—picks recipients of corporate Christmas gifts in 50 per cent of companies, the DR&MI survey shows:

But the man who decides who may do the picking is, more than two thirds of the time, an executive outside of sales: 31 per cent sales, 69 per cent other.

Even fewer are the cases where the sales force is given a budget for the purpose and allowed to spend it as it sees fit. Only 24 per cent of companies give sales this latitude; in 76 per cent, gift-givers are named by someone of a higher company rank.

Here's who names the recipients:

Salesmen .....	18%
Sales Manager .....	22%
Sales Department .....	10%
President, Owner .....	20%
Officers, General Executives .....	15%
Dept. Heads Other Than Sales .....	15%

have just as tough a problem as the man who once had to find out whether you preferred a gift of golf balls while I preferred tennis balls ... or what have you.

A few suppliers of Christmas gifts have made a move designed to meet the problem of the company that wants to give a *fitting* present, but is not sure what the recipient would like and hasn't the means to find out. These vendors offer to supply prospective recipients with a list of choices (at the cost stipulated by the donor), so that the man on the receiving end is more certain to get something he likes.

This development helps meet one of the objections sometimes voiced by the donors. To insure the health of their business, the vendors will probably have to develop other ways of tailoring the program to fit the needs of both donor and receiver. One of the best ways, a study of responses to the DR&MI survey indicates, would be to emphasize advisory service to givers, at the expense of pushing product.

Detailed data and comments from survey participants, shown in these pages, will give a lead to the major problems facing donors—which may, if no one offers effective advice, result in

fewer companies rallying around the old Christmas tree.

Most giving companies follow good management practices in their Christmas activities, but the minority is large enough that it should be of concern to the concerns that supply the Christmas presents. For example:

In two-thirds of the answering companies, a general executive determines number and cost of gifts; with the others, a budgeted amount is given to those who choose recipients, to use as they deem best.

In about 95 per cent of companies, a new list of recipients is made annually, or old lists are reviewed once a year. But among the remaining 5 per cent are the companies that may not be giving presents next year. Five per cent is a big figure if it is the 5 per cent that marks the difference between loss and profit.

Of all the companies who give presents, nearly 30 per cent feel it is "just a habit," and it is among these organizations that the "don't-gives" of next year will be recruited. *More than one-third* of those who consider Christmas gifts "just a habit" have a change of policy in mind. *Less than one-sixth* of those who have a *specific advantage* in mind in their giving—even though it may be something as vague as "good will" or "appreciation" of favors done—expect to change their practise. Obviously, it is upon those who see the giving as just a pointless habit that the "Christmas-gift industry" must concentrate its attention.

The very fact that "specific" advantages are enumerated in terms of "good will" and "appreciation" is in itself enough warning that a vendor wishing to cater to these needs should sell his service, not his product. An automatic pencil that satisfies John Doe is a better gift than a box of El Ropos that irritates Richard Roe. The vendor who wants to keep the donor among the ranks of corporate Santa Claus must sell it neither automatic pencils nor boxes of El Ropos, but the satisfaction of the recipients.

It is obvious from the responses to DR&MI's survey that business and industrial concerns do not demand that Christmas gifts make actual sales. They are, for the most part, concerned with large generalities like "good will."

### Who Gets the Presents?

Buyers, or prospective buyers, are most numerous on the Christmas lists of the companies canvasses in the DR&MI survey. Here's whom gifts go to:

Customers .....	43%
Purchasing Agents .....	18%
People Who Have Done Favors .....	17%
Prospects .....	5%
Others .....	15%

Among the "others" are 19 categories, many of them apparently customers or prospects, and even one city official.

## Christmas Giving

"THINK!" insists the admonition that hangs on the wall in front of the average executive, whether he be figuring out to whom to give Christmas presents, how to spur productivity, where to make more sales—or even what to do about the wife's nephew.

But THINK is a command so broad in its coverage that it often leaves a man stymied as to where to begin. THINK, but *about what?* Or *how?*

F. T. McGowan, safety director of The Borden Company, has a story in point, about the sheik's son who inherited his father's harem. "I know what I want to do," the young man said, "but I don't know where to begin."



*Determining purpose is the first step to gift-policy.*

Perhaps it would be better if all those THINK signs were replaced with ones that read, "WHY?" Certainly that is the case with the man who is approaching the problem of his company's attitude and policy on gift-giving.

Whether the giving of corporate Christmas presents is a matter of Christmas spirit, of rewarding past friends, of creating new ones, or simply of habit, determination of the company's purpose is a necessary first step. Only with a purpose clearly in mind will it be possible to organize an orderly policy, set a rational budget, determine suitable gifts and simplify the task of deciding to whom to give them.



*Budget and organize to keep giving under control.*

## Takes Organization, Planning for Best Results

Remarks of many respondents to the DR&MI questionnaire, both among those who give gifts and those who have abandoned the practise, indicate that better organization, setting up of a budget—in short, treating this matter like any ordinary production problem—might eliminate much dissatisfaction with gift practises.

"It got completely out of control," complained one president, "and did us more harm than good." "It ran away with itself," said another president who had abandoned the custom. "We never knew where to stop," said another; "there were too many buyers, assistants, secretaries, officers, etc." "Sales and service personnel are prone to be over-generous with the company money," said the president of an automotive firm.

Especially where gifts of substantial value are involved, and employees who choose the recipients may be tempted to play Lady Bountiful, good organization of giving is desirable to keep matters under control.

What presents a company gives, and how many, may be affected by what competitors plan to do, as well as by one's own purposes. The general manager of a building supply service, for example, told DR&MI of this competitive problem: Two years ago his company decided to eliminate hard feelings by giving telephone book covers of good design and material to



Keep eye on competitors to avoid embarrassment.

"practically everybody" it considered a friendly contact. But that year a competitive concern chose to give expensive hams to a limited list. "Where the lists overlapped," said the general manager of Company No. 1, "some of the customers were extremely difficult. We were cheap!" But he continues to give "remembrance" items costing \$2.50 to \$3.00, though hoping "in years to come that all gift-giving will be done away with."

Fitness of the gift is an important factor to consider. It is unlikely that any company will ever give anything as expensive as an electric razor to a woman executive, but similar faux pas are sometimes committed where all recipi-

ents get the same gift—a bottle-opener to a teetotaler, for instance.

In choosing the one-gift-for-all, the broadest kind of acceptability is necessary. The kind of gadget that the recipient gives to his office boy or the janitor, because it has no value for him,



Fitting gift counts double, others may rate zero.

probably has little value for the donor, either.

With the more expensive gift, supposedly picked for an individual recipient, fitness is perhaps even more important. A box of cigars for a man who doesn't smoke may let him make friends with those he passes them out to, but it says very little about the thought put into the gift. For the amount spent, a good deal more return in the way of appreciation could be obtained with a little more care in selection.

There has been a considerable increase, in recent years, in the practise of making a contribution to a charity in a customer's or client's name—letting him know it has been done, of course. Some people, reluctant to accept a gift, have applauded the idea, which was mentioned by several respondents to the questionnaire. Even in this seemingly unobjectionable scheme, however, there lurk possibilities of doing the wrong thing. Some recipients of Christmas gifts may be just selfish enough to want to keep on getting them. Others may dislike the charitable organization to which the substitute contribution is made, yet be unwilling to say so.



Gifts in poor taste give a black eye: shun them.

Different from the problem of fitness of gift to the individual is the matter of choosing something that will universally be considered to be in good taste—for which no standards can be set. The American Institute of Architects is said once to have made an award, for the art object in the worst possible taste, to a statue of Venus de Milo with a clock mounted in the abdomen.

Probably no industrial or business concern is guilty of giving such a monstrosity to anyone with whom it wishes to remain on friendly terms—but you can never be sure. What's good taste to me may be shockingly bad to you. If there is any possibility of doubt—and even if there is not—it's well to try out gift ideas on a variety of people while in the planning stage.

A little Chic Sales humor may be inoffensive to most people, but some men resent it in anything so public as a gift. And when your list includes women recipients, it's bad.

Over-commercializing the gift is a sin of this category, too. On some gifts, an indication of



Prune your gift list annually, or you'll trip on it.

the donor will seem out of place. On others, it will be all right. But when a remembrance item is turned into a TV-type commercial for the donor's product, Christmas good will is likely to fly up the chimney.

Another problem that needs meeting head-on is the maintenance of gift lists. A majority of questionnaire respondents told DR&MI they make up new lists each year, or go over the names on last year's list individually. But others indicated they let the lists grow, apparently fearing to take a man off, once he has been put on the receiving line.

The secretary of a truck and trailer body-manufacturing company says names are taken off its list if their owners have not been the source of any business for two years. Another company sets the limit at three years.

But a couple sound wistful: "It's hard to get a name off the list," says one. "Death," says another, succinctly, when asked what procedure is used to prune lists. This Santa needs a gun.

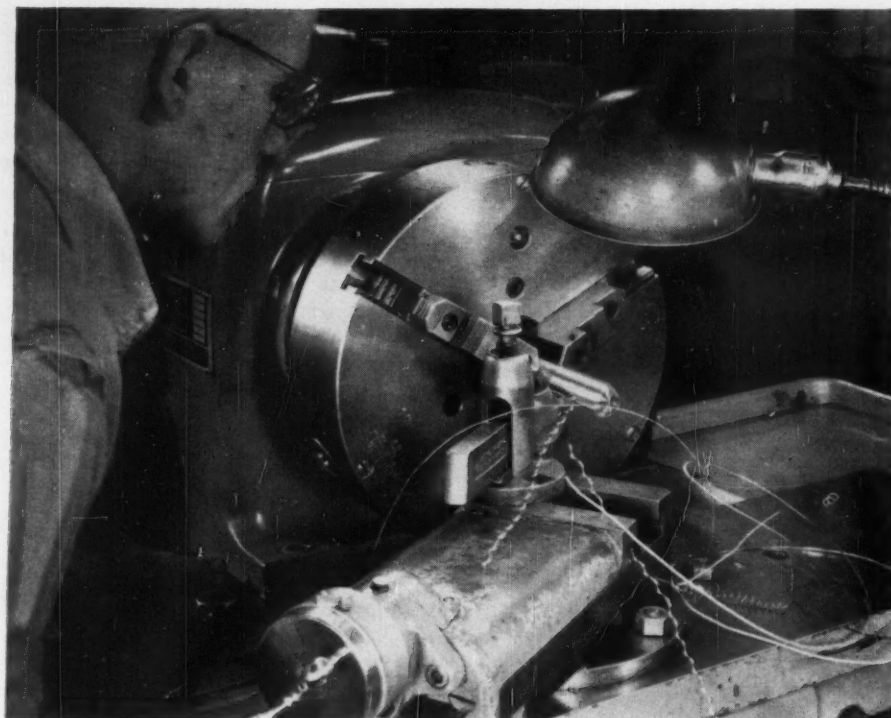


# ZIRCONIUM

## *new metal for industry?*

ANNESTA R. GARDNER,  
*Industrial Editor*

*Is it a real comer—or just another high-priced special-purpose material? Should you get it or forget it? Here are the up-to-date facts.*



Machinable and weldable, ductile zirconium can be fabricated into complex parts like those pictured below. Sinuous chip indicates metal's softness and toughness.

**D**OWN 90 per cent in price in the past six years, and up a good 900 per cent in productive capacity, zirconium looks like a hot prospect.

It is—and it isn't. And there lies an important story for all of industry.

Zirconium is a metal, similar to steel and titanium in appearance; midway between them in weight. It's strong, remarkably corrosion-resistant; and, in pure form, workable and weldable. It has an unusually high melting point (above 3,300° fahrenheit), and unusual nuclear properties which make it desirable for atomic energy use.

Sounds good, doesn't it?

But look at the other side of the picture:

Zirconium is neither workable nor weldable unless it is almost completely free of such common elements as carbon, nitrogen, and oxygen. Yet, at elevated temperatures, zirconium develops a voracious appetite for them—and they give it indigestion in the form of weakness and brittleness. That means refining the metal is an immensely difficult job, and using it at even moderately high temperatures can pose severe problems.

Even when protected from these elements, zir-

conium's performance at elevated temperatures leaves much to be desired. Its strength drops off so rapidly as the temperature goes up that it is less than half as strong at 900° fahrenheit as it was at room temperature. By the time the thermometer reaches 2,100°—still below its melting point—zirconium has all the strength of a celery stalk.

Wear resistance is another weak point. The shaft sleeve pictured below (far left), for instance, is much more resistant to corrosion than the cast iron part it replaces. But, says J. H. McClain of the Bureau of Mines Northwest Electrodevelopment Laboratory, "zirconium shaft sleeves may not be suitable where packing is used since the ductile metal does not resist abrasive wear."

Zirconium's biggest hurdle is its weight. On a strength-weight or a price-volume basis, it just can't compete with either titanium or stainless steel. Zirconium is half again as heavy as titanium, and no stronger. It weighs only 20 per cent less than stainless steel, yet costs 30 to 50 times as much.

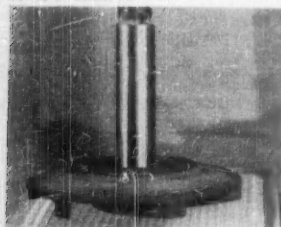
As of September 1, the rock bottom price for zirconium sponge (the raw metal—see photographs, opposite) was \$7.50 a pound. Titanium

was \$3.50. Stainless steel in ingot form was about 20 cents. Since semifinished forms (rod, bar, and shapes) cost about twice as much, even a small amount of zirconium represents a considerable investment. A foot of one-inch round stainless steel bar stock, for instance, can be had for about a dollar. In titanium, it would be about \$13. The same amount of zirconium would be \$39 to \$60.

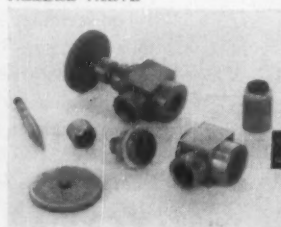
Still, this is a vast improvement over the situation a few years ago, when zirconium was about \$300 a pound, and further price cuts may be expected. The metal is only now starting its real commercial life.

This metal, like titanium, received its first serious attention during World War II, when the hunt was on for any and all materials that could replace the scarce strategic metals on which we were so dependent. The ores of both metals are widely distributed (there are beaches full of zircon sand in Florida), and both were known to have a number of good qualities. But, at that time, there was no practical, low-cost refining process for either one. The refining process that was being used, known as the iodide or crystal bar method, produced excellent material, but at a staggering cost. (It involves

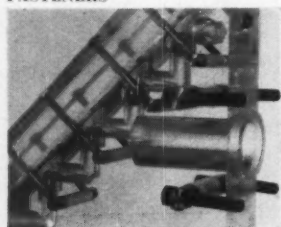
SHAFT SLEEVE



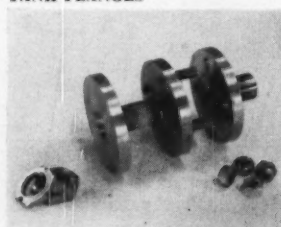
NEEDLE VALVE



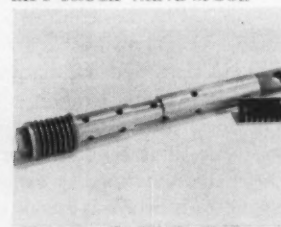
FASTENERS



TANK FLANGES



LIFT TRUCK VALVE SPOOL



BUREAU OF MINES PHOTOGRAPHS BY R. W. NELSON

vacuum deposition of the metal from its iodide, and produces crystalline bars of zirconium like those pictured on page 44).

The first real break for both metals came with the development, by W. J. Kroll of the Bureau of Mines, of a magnesium reduction process that turns out good-quality metal in a much less expensive way. It was the method used by the first large-scale producers of titanium, and has been adapted for zirconium.

Titanium got a head start in commercial production because of its aircraft potential. Unfortunately, almost everything that has been learned about that metal has tended to increase its lead and put a damper on enthusiasm for zirconium.

For instance, zirconium's excellent resistance to sea water corrosion whetted the interest of marine builders. Titanium was not expected to be as good. It isn't—quite. But it's good enough so that it can take over a lot of the jobs that might have gone to zirconium.

On the other hand, the problems encountered in refining and fabricating titanium made prospective users wary about tackling another metal of the same kind.

It was not until zirconium's remarkable nuclear properties were discovered that the metal really got off the ground. Then, the Atomic Energy Commission stepped in, and spurred interest in the metal all along the line. In 1952, it signed an agreement with Carborundum Metals Company for production of 150,000 pounds of the metal a year—many hundreds of times the total turned out less than a decade ago.

In the atomic energy field, zirconium has been a lot like the ugly duckling that turned into a swan. At first, its prospects didn't look good.

As noted on page 44, atomic power plants need materials of construction that will not gobble up neutrons.

The AEC tested zirconium along with the other metals; but, in the early tests, it didn't do very well. As late as 1947, there was a good deal of uncertainty about whether the metal would or would not be satisfactory. However, most of the "pure" zirconium metal then obtainable contained about 2 per cent of another element, hafnium. The two are found together in nature, are chemically similar, and are extremely difficult to separate. Since hafnium did not seem to affect zirconium's physical properties adversely, it did not seem worthwhile to extract it. It was known that hafnium had a large capacity for neutrons; but no one was sure quite how large, and how much it affected zirconium.

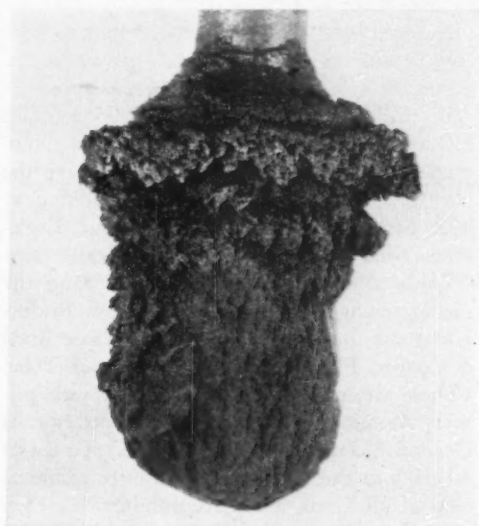
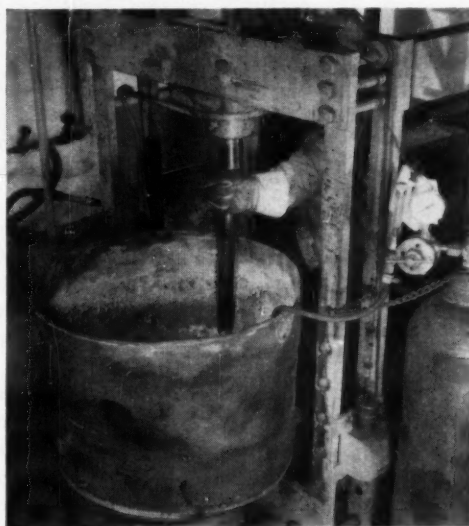
Finally, pure samples of the two metals were prepared and tested, and zirconium's grey skies turned to blue.

Hafnium-free zirconium came through the neutron test with flying colors. Of all the metals—less than half a dozen (beryllium, bismuth, lead, magnesium and silicon) have lower neutron affinities, and none of these can match zirconium's combination of structural strength and corrosion resistance. (Titanium's neutron affinity is

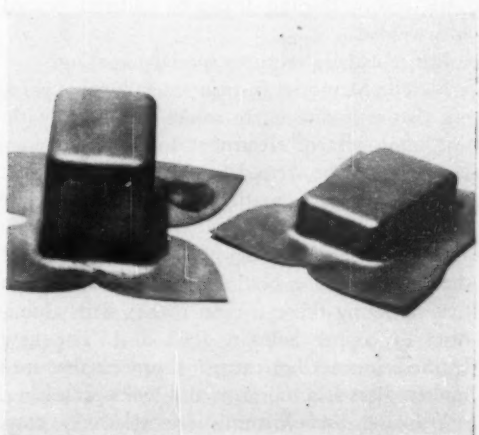
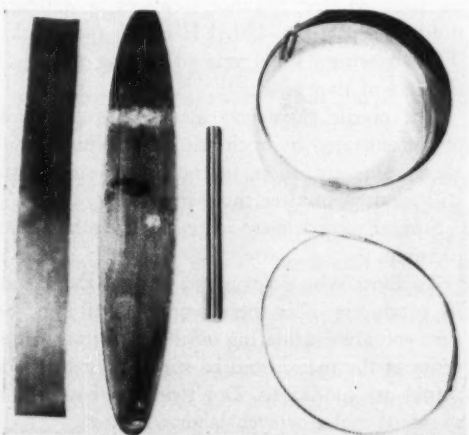
## VITAL STATISTICS

Here is how commercially pure zirconium stacks up against titanium and 18-8 stainless steel. (Note: Figures represent median values. Considerable variation from them may be expected in individual cases.)

	TITANIUM	ZIRCONIUM	STAINLESS STEEL
Weight			
Density (lbs./cu. in.)	0.163	0.235	0.286
Specific gravity	4.5	6.5	7.8
Strength (ult. tens.; psi)			
Room temperature: Annealed	70,000	60,000	75,000
Cold worked	120,000	110,000	150,000
Elevated temperature (900°F)	30,000	20,000	75,000
Scaling point (°F)	900	1,000	1,650
Transition point (°F)	1,625	1,585	1,900
Melting point (°F)	3,150	3,350	2,590



Raw zirconium metal, as reduced from its ores, has this spongy appearance, must be remelted into ingots. At left is Kroll-process crucible used by Bureau of Mines; at right, sponge-laden electrode from Horizons, Inc. fused salt reduction process. This process is now in pilot plant stage.



Sheet, bar, foil, and wire may now be obtained commercially; shaped in many ways. Samples at left were produced by Horizons, Inc. At right are hat-shaped sections made from sheet material by Brooks & Perkins using hot-drawing techniques similar to those developed for magnesium and titanium.



more than 30 times that of zirconium; hafnium's, more than 600.) As W. A. Johnson, who was manager of the Materials and Reactor Department of Westinghouse Electric's Atomic Power Division, has pointed out, zirconium offers a combination of acid and alkali resistance which "is matched only by the noble metals, platinum and gold." Furthermore, it has a low modulus of elasticity and low thermal expansion which make it attractive for structural use.

It's not surprising, then, that zirconium is much in demand for nuclear power plants, and that the Atomic Energy Commission was willing to authorize even the costly iodide process to get high-purity metal for the first atomic submarine.

At present, there are four commercial producers of zirconium, though only two—Zirconium Metals Corporation (a subsidiary of National Lead) and Carborundum Metals Company—are in large-scale production of Kroll process sponge metal.

Metal Hydrides, Inc. produces zirconium metal powder (see page 52). Foote Mineral Company makes and sells both the powder and the iodide metal. (There is a small but continuing demand for the iodide metal, despite its high cost, because its ultra-high purity gives it exceptional workability and corrosion resistance.)

If the new Horizons electrolytic refining method, now in the pilot plant stage (see photograph, page 42) proves out, it may pave the way for a third major producer. In addition, at least two other companies—Crane and Eagle-Picher—are seriously exploring the field.

Quite a few companies are fabricating the metal; among them, Allegheny-Ludlum, Bridgeport Brass, Brooks & Perkins, Inc., Chase Brass & Copper, Firth Sterling, and Superior Tube. (These are, of course, in addition to such primary Atomic Energy Commission contractors as General Electric and Westinghouse.) To tempt others into the field, producers offer technical help of all kinds, and Carborundum has even devised an "Evaluation Kit," containing 17 samples in three grades. It's priced at \$150.

Zirconium can be fabricated in most of the usual ways—rolling, extrusion, drawing, spinning, and machining. It can be soldered, brazed and welded.

But it usually requires special handling.

Battelle Memorial Institute metallurgists point out that it is difficult to solder the metal without some sort of treatment to provide a surface that can be wetted by the soldering alloys. (Battelle suggests coating it with a thin layer of zinc.)

In extrusion, the big problem is galling of the dies. Argonne National Laboratory reports that jacketing the extrusion blanks with aluminum or copper helps a good deal. The new Ugine-Sejournet hot extrusion process that uses molten glass as a lubricant also looks promising.

Drawing and forming are relatively easy. Magnesium and titanium paved the way. Engineers at Brooks & Perkins, Inc., who have been working with these two for some time, report

that techniques developed for them may be applied to zirconium with only slight modification.

Powder metallurgy provides another route to fabricated parts. This method holds considerable promise for alloy development. Again, though, special measures are required, both to protect the metal, and to protect the fabricator from the powder. In finely-divided form, zirconium (like titanium and magnesium) is highly reactive. It oxidizes explosively, and may ignite spontaneously in air at temperatures as low as 550° fahrenheit. For this reason, it is generally shipped and handled wet, and used with the precautions shown in the photograph on page 52.

Zirconium's high-temperature reactivity makes casting difficult. It will even attack its own oxide, the refractory zirconia, at temperatures above 2,500° fahrenheit. However, titanium presents similar problems, and casting methods are being developed for both metals.

Where, then, can zirconium be used?

Because of its excellent corrosion resistance at moderate temperatures, it has frequently been suggested as a replacement for tantalum in chemical and electrical equipment—heat exchanger tubes, cooling coils, contact points. Here, the price differential is all in zirconium's favor. Tantalum is much heavier, and it costs \$65 to \$70 a pound.

So far, though, zirconium does not seem to have made appreciable inroads on tantalum's markets.

In Europe, zirconium is used as a replacement for platinum in rayon spinnerets; but it has not made much headway here. Likewise, the metal has been suggested for surgical use (as a bone replacement, for instance); but is not moving into that field very fast.

A preview of possible industrial applications is provided by the Bureau of Mines' use of the metal in its own zirconium pilot plant. As McClain points out, the production of zirconium metal involves a variety of corrosive atmospheres, solutions, and other conditions "that defy the usual materials of construction and make the Kroll process a useful proving ground."

The zirconium hydraulic valve spool, pictured on page 44, for instance, replaces a standard mild steel part that lasted less than two weeks. The zirconium spool was still going strong at the end of two years.

The needle valve was used to regulate flow of concentrated hydrochloric acid. While it did show some corrosion, in the valve seat, it was still serviceable after three months.

Similar records were scored by the other units pictured.

To those who do want to try out the metal, its producers offer these words of caution: be sure you are considering *all* the important properties of the metal; and be sure to test it under actual use conditions. Don't depend entirely on standard tables or even laboratory tests.

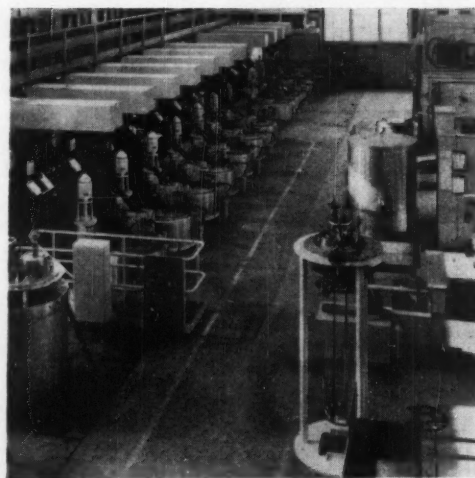
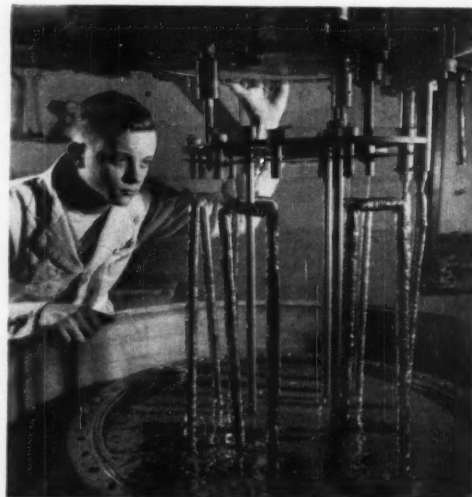
For instance, at elevated temperatures, stress-rupture strength and creep rate may be even

*Continued on page 52*

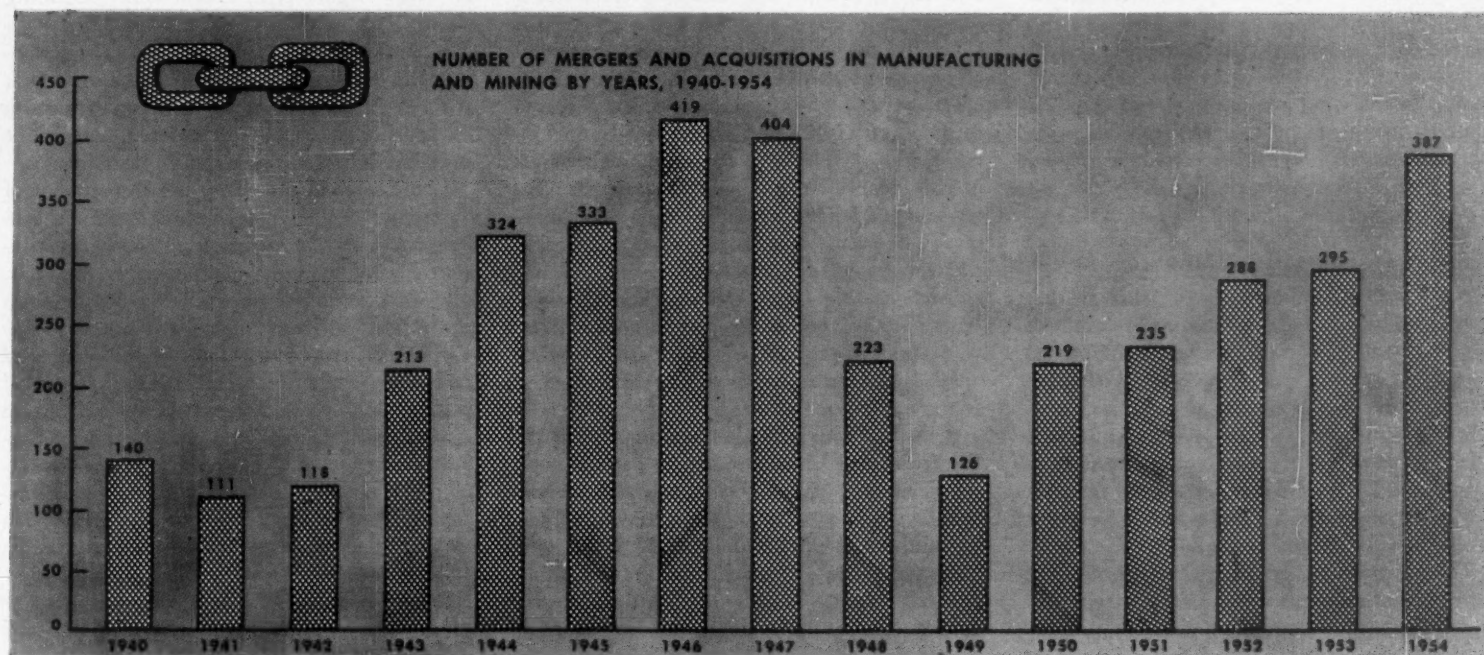
## Zirconium and Atomic Energy

Zirconium's biggest break came with the discovery of its unusual nuclear properties. For nuclear reactors of the thermal type (those built for the atomic submarines, for instance), it is important to choose structural materials that will not gobble neutrons (the atomic particles that make the chain reaction take place—see January, page 36). Since these materials must also resist chemical corrosion and radiation damage, the choice is limited; and zirconium is one of the best. It is used not only as a material of construction, but also as a protective cladding for the uranium "fuel." This explains why the Atomic Energy Commission is spurring production, and why it was willing to accept even the expensive iodide process (see below) to get enough of the metal in time for the first submarine.

High-purity crystal bars are produced by iodide process, but at high cost. Westinghouse used it only until satisfactory Kroll-process metal was on hand. This plant is now shut down.



# An Outlook on Mergers



MERGER MOVEMENTS IN AMERICA HAVE COME IN DISTINCT PHASES AND FOR VARYING REASONS. THE LATEST UPSWING HAS BEEN MAKING HEADLINES REFLECTING THE OPINIONS OF PRIVATE INDUSTRY AND GOVERNMENT. WHETHER OR NOT THE TREND IS IN THE NATIONAL INTEREST, IT IS IMPORTANT THAT WE KNOW WHY AND HOW MERGERS TAKE PLACE AND WHAT EFFECT THEY MAY HAVE ON THE NATION'S ECONOMY. HERE IS A REVIEW OF RECENT DEVELOPMENTS.

EDWARD F. HOWREY  
Chairman\*, Federal Trade Commission

SINCE WE ARE immersed in what has been described as a flood tide of mergers, it may be of some value to attempt an objective analysis of the present-day merger trend. It is, of course, economically—as well as intellectually—frustrating to suggest that mergers—by which I also mean corporate acquisitions and consolidations—are either unlawful *per se*, or entirely benevolent. Like most other business practises, mergers take on economic and legal coloration in the market context in which they arise.

The classic American merger movements, at the turn of the century, in the 1920's, and now, have each occurred in distinctive historical settings and can only be closely analogized at the risk of subverting a real understanding of their significance.

The great merger boom of 1887-1904 (which gave impetus to the passage of the Federal Trade Commission and Clayton Acts) was principally spurred by business tycoons intent on building personal industrial dynasties. The

merger wave of the 1920's (which prompted enactment of the Securities Exchange Commission Act and the Public Utilities Holding Company Act) was raised on an inflated base of speculation and stock manipulation. By contrast, I think it is fair to say that the present wave of mergers, beginning about 1946-47, has been largely impelled by what purport to be rational managerial decisions: quick expansion to exploit new or burgeoning markets; diversification of product line to spread capital risk and to broaden market outlets; integration forward to provide distributional economies or backward to ensure efficient flow of source materials; consolidation of hard-pressed small producers in oligopolistic markets to wage more effective competition.

I have used the word "purport" with design, for even the most impassioned business advocate will recognize that rational management factors may be distorted in the stress of competitive battle; and a partisan view of what most effectively bolsters the competitive process is

certainly susceptible to a kind of economic asigmatism. Yet it can certainly be said that the present merger wave, however enigmatic, is motivated far less by considerations of personal aggrandizement than were the earlier movements. This, of course, though relevant in any appraisal of the economics of mergers, is hardly exculpatory if the merger in fact tends to affect competition in some way proscribed by the anti-trust laws.

For the past two years I have lived daily with the problems of mergers: the real and present dangers which the monopolistic tendencies of some mergers produce, the imagined perils regularly conjured up by a few frantic observers, and the uncertain competitive problems which mergers inevitably pose for the future. As I leave the Federal Trade Commission to return to the private practise of law, I look back on a period which has been professionally the most

\*Mr. Howrey's resignation from this post became effective September 12. His successor is John Gwynne.



rewarding of my life; one, moreover, which has sharply reaffirmed my faith in the corrective strength of the American economy. We have learned a great deal about mergers during these years which we never knew before; why they take place, how they take place, what effects they have on our economy. I think we have also learned that vigilance against merger abuses cannot be relaxed, but that vigilance need not become panic. And we have learned too that sufficient Government resources can be made available to strike down the economic excesses of mergers without hamstringing the free workings of our entire economy.

### Is There Any Danger?

What are the dimensions of this merger movement which have given rise to so much "fustian clamor," as one commentator puts it? And what are the actual anti-trust risks—beyond partisan bombast—which potential corporate mergants run? Certainly, these questions must be foremost in the minds of business executives, weighing the merits of future mergers, who sincerely wish to guide their enterprises within lawful bounds.

The answers are not entirely clear, but recent developments increasingly illumine our understanding.

In any discussion such as this, it is important to bear in mind the anti-trust implications of mergers. America's faith in the ultimate validity of a free enterprise economy was early translated into wise generalities of the Sherman Act, which banned contracts, combinations, and conspiracies in restraint of interstate commerce and monopolization of or attempts to monopolize interstate commerce. Later the Clayton Act added prohibitions against specific incipient monopolistic practices, including certain bans against corporate acquisitions. Both statutes theoretically were available to attack unlawful mergers: The Sherman Act to strike down mergers which amount to restraints of trade or monopolization, the Clayton Act to cut off mergers which may substantially lessen competition or tend toward monopoly.

As a practical matter, however, the courts restricted the Sherman Act's effect on mergers to a point where it is of doubtful practical use. Prior to 1950, this was equally true of the Clayton Act which was limited in its effect to acquisitions of *stock* in *competing* companies. A series of court decisions had held that where stock acquisitions were used to effect transfer of physical assets before the Government moved to invalidate the acquisition, the courts and the Federal Trade Commission were powerless to order divestiture of the acquired assets.

However, the Anti-Merger Act of 1950

(amending Section 7 of the Clayton Act) widened the Act's application to include acquisitions of *assets* as well as stock, to eliminate the previous requirement that the acquired and acquiring companies be in competition, and substantially to broaden the Act's geographic reach. To-day it is this provision—Section 7 of the Clayton Act—which is the basic anti-trust inhibition against unlawful mergers. Yet the amended act raises many *questions*. Section 7 bars a corporate acquisition "where in any line of commerce in any section of the country, the effect of such acquisition may be substantially to lessen competition or to tend to create a monopoly." But what, in pragmatic market terms, is the relevant line of commerce and the appropriate section of the country? When does a merger "substantially" lessen competition or tend toward monopoly? And what standards are to be applied in measuring the oblique market effects of the many types of mergers?

Both the Federal Trade Commission and the Department of Justice are aware that these and other interpretative problems can only be settled finally in the courts. The process of securing authoritative judicial interpretation is now well under way. The Federal Trade Commission has presently issued complaints against five corporations alleging unlawful mergers. The Department of Justice similarly has brought three civil suits in the federal courts seeking to bar merger activity.

Federal Trade Commission complaints charge Pillsbury with unlawfully acquiring Duff and Ballard, two leading competitors in the sale of flour and flour-base mixes; Luria Bros., the nation's largest scrap iron and steel dealer, with

unlawfully acquiring a number of competing dealers; Crown-Zellerbach with unlawfully acquiring St. Helen's Pulp and Paper Company, its chief West Coast rival in the sale of kraft paper products; Farm Journal, the nation's largest farm magazine, with unlawfully acquiring Better Farming, the number two farm magazine; and Union Paper Corporation with unlawfully acquiring a substantial minority stock bloc in **Hankins Container Company** which allegedly assures Union of orders to supply the container-board requirements of Hankins.

Court cases instituted by the Department of Justice include an action seeking to enjoin consummation of the merger between Schenley Industries, the nation's largest whiskey producer, and Park and Tilford, a smaller but vigorous competitor; a suit seeking to require the divestiture by General Shoe Corp. of the stock and assets of competitors acquired in a series of transactions over a five-year period which are alleged to have weakened competition as a result of their cumulative effects; and a suit designed to break up the merger of the Hilton-Statler chain of hotels, alleging particularly an unlawful lessening of competition in convention business in a number of major cities.

These cases, and others to follow, should go far toward interpolating explicit definitions into the Clayton Act's general bans. Despite protestations of a few chronic dissidents that the Clayton Act is a *per se* statute—that is, one which bars *all* mergers without considering their market effect—I do not believe that any serious student of the law doubts that only *some* mergers, those which cause the injurious competitive impact barred by Section 7, are unlawful.

UNITED PRESS PHOTO



In the Federal Trade Commission Building in Washington, tabs are kept on the who, the why, and the how of business mergers. Any company, contemplating merger action or other form of acquisition, needs to keep one legal eye on the opinions of FTC and the other on the decisions to come from federal courts.

At the moment, we move toward an understanding of *which* mergers are bad. For this reason, I think business men—as well as anti-trust enforcement authorities—will find considerable solace in the clarified standards of competitive conduct which present anti-merger litigation should provide.

Beyond these cases, probably the most noteworthy recent merger development was the issuance in May 1955 of the Federal Trade Commission's Report on Corporate Mergers and Acquisitions. More than any single infirmity, we had been handicapped by the lack of precise knowledge of the actual facts of contemporary mergers. The Commission's report supplies an incisive, forthright body of factual data to replace the speculation and conjuration that had gone before. Designed primarily as a guide to the Commission, the Department of Justice and the Congress, it should have wide appeal generally for business men as well.

The report points out that mergers have increased to three times the 1949 rate, are nearing the postwar peak rates of 1946-47, but are well below the pre-depression rate of the late 1920's.

Merger activity has been stronger in some industries than in others. Industries marked by significant increases in merger activity included the baking, dairy (and other food products), textiles, non-electrical machinery, automotive, and metals industries.

Two major statistical studies are contained in the report. The first of these analyzes 1,773 mergers and acquisitions during 1948 to 1954 in the manufacturing and mining fields.

Nearly two-thirds of these acquisitions, the report points out, were made by companies with

assets of \$10 million or more. In contrast, companies with assets of less than \$1 million accounted for less than 8 per cent.

The largest number of acquisitions during 1948-1954 were in the non-electrical machinery industry with 249 mergers and in the food products industry with 243. Together, they accounted for more than one-fourth of the mergers in manufacturing and mining. The next eighteen industry groups in number of mergers were: chemicals, 168; fabricated metals, 161; transportation equipment, 125; textiles and apparel, 117; electrical machinery, 111; non-manufacturing, 96; mining, 81; primary metals, 78; stone, clay and glass, 70; paper and allied products, 60; professional and scientific instruments, 47; lumber and furniture, 40; petroleum and coal products, 35; printing and publishing, 24; rubber products, 23; leather products, 21; miscellaneous manufacturing, 20; and tobacco manufactures, 4.

The study also draws a comparison in the size of acquiring companies during the 1948-1954 period with those acquiring properties during 1940-1947. During the earlier period, companies with assets exceeding \$10 million accounted for 57.9 per cent of all acquisitions. During the later period, the percentage rose to 65.5. Nearly all of the gain came from companies with assets ranging from \$10 to \$49 million, since the proportion for companies with assets above \$50 million was about the same for both periods.

The second statistical study covers some 2,100 mergers and acquisitions (including companies acquired only in part) in the manufacturing, mining, trade and certain service industries. These took place during the 43 months following enactment of the Anti-merger Act of 1950.

Of these mergers, the report shows, one-third involved property valued at \$750,000 or more, with well over 100 cases in which the property acquired was worth at least \$10 million. Among the acquiring companies, one-fifth had assets of \$50 million or more, and about 1,000 had assets of at least \$10 million.

Among the acquisitions recorded by the staff of the Commission, large companies are revealed as having acquired more medium-size properties than were acquired by medium-size companies and more small properties than were acquired by small companies.

### Who — How — Why?

The report next examined the "who-how-why" of current merger activity.

The "who" is generally the acquiring company, and promotion of this type, the report says, is the most important. Mergers originating with the acquired company also are common, particularly where smaller companies wished to sell out to other companies. Promotion by a divesting company is frequent in cases where it seeks a buyer for part of its property or business. Still another important agent is the outside financial or other interest who finds it to his advantage (because of stock ownership, interest in products or services to be provided, or fees to be collected for promotional assistance) to see that the combinations or acquisitions are made. Of less frequency is the merger promoted by the joint efforts of both parties to it.

The report suggests "that more and more firms representing outside interests are becoming engaged or involved in the business of promoting or playing some other vital role in merger formation."

Dealing with the "how" of mergers, the report describes as the plans most often used in important acquisitions the exchange of stocks between companies, and the purchase of stock of the acquired company from individuals and firms either privately or in the open market. The report also describes the several forms of organization used in acquisitions and mergers.

Turning to the "why" of mergers, the report lists five reasons (involving competitive factors) which seem to occur most frequently. These are: additional capacity, accounting for two out of five acquisitions; diversification of products accounting for one out of four; backward vertical mergers looking toward sources of supply, one out of eight; forward vertical mergers looking toward ultimate sale to consumers, one out of ten; and additional capacity located in new markets, one out of ten.

Strictly competitive factors, however, are not

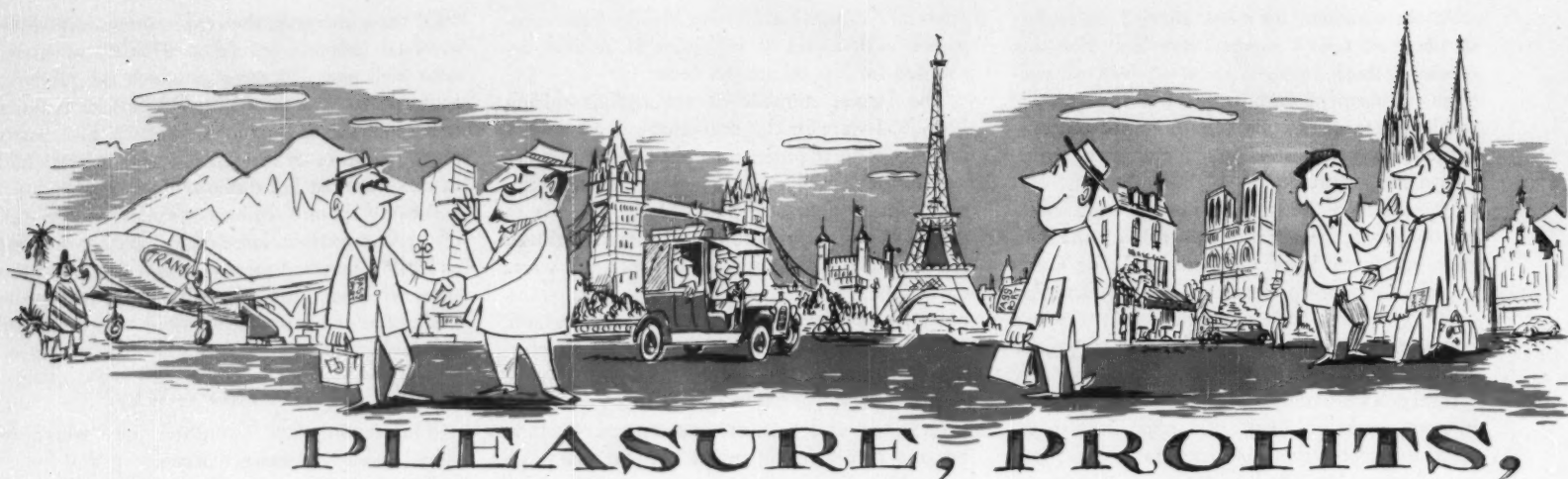
*Continued on page 130*

DAYTON, OHIO—DEVANEY PHOTOGRAPH



Whether the business be big or small, industrial or commercial, mergers will have an effect upon it. The effects will be far-reaching, extending down the line to employees, dealers, stockholders, as well as the general public and management. It is not easy, but there is no simple path to growth.





RICHARD LURIE  
Editor, American Exporter

COMBINING PROFITS WITH PLEASURE IS THE AIM OF AMERICAN BUSINESS MEN AS THEY BOARD FOREIGN-BOUND PLANES AND SHIPS, PASSPORTS IN HAND. BUT TO GET THE MOST FROM THESE JOURNEYS, THEY

ONE YOUNG executive recently asked his vice-president which city he had liked best on a recent European business trip. "Stockholm," was the prompt reply.

"Why?" said the junior—somewhat facetiously as he expected the typical answer, "The best smorgasbord I ever tasted and some of the most beautiful women I have ever seen."

Instead, came this surprising reply, "Because my shirts were done whiter at the Grand Hotel than at any other European hotel."

When I repeated this to another business man, recently returned from a similar European trip, his reply was, "The Metropole in Brussels will beat the Grand. You get your shirts back in two hours, each individually wrapped in cellophane."

Both of these business men may have had a profitable foreign trip, but did they enjoy them-

meter, it was waste baggage. He didn't even have time to take it out of the case.

This sort of travelling will not leave a particularly good impression on potential customers. And what's more important, it isn't necessary at all.



Chances for your taking a business trip abroad in 1956 are better than they have been for several years. There are four reasons for this:

(1) Our exports in 1955 to the rest of the world will top \$14 billion—a 7 per cent rise over 1954. This figure represents commercial exports. Military aid is not included.

(2) Our imports this year are expected to hit \$11 billion, an all-time record high.

(3) More and more American manufacturers are franchising their foreign counterparts to make specified products. A noticeable trend towards this has taken place in Japan, Italy, France, Australia, and England.

(4) To overcome tariff walls and other foreign trade restrictions, the move towards establishing direct subsidiaries abroad is increasing. In this way American manufacturers can compete with the locally-made products. As an example: Since the end of World War II, more than 50 American manufacturers have established Dutch subsidiaries.

Remember, you *can* make a profitable business trip abroad—seeing everyone you want to see—and you will still enjoy yourself. In fact, if you plan your trip correctly, you will have a much better time than any tourist. You will be spending your free time with the nationals of the country—not with a tour director. The key, therefore, to the successful business trip abroad is *thorough advance planning*.

Planning not only means determining the countries you want to visit and what hotels to stay at—it means organizing a whole host of details, important to the business man rather than the tourist. Here are some of the things to watch and plan for.

The very first step is to start planning your trip at least *three to four months* in advance of your departure.

When to travel is perhaps the most important question to be answered. You will not find



many top-flight European business men in their offices during July and August. Try to avoid the rainy season from March to August in most of Latin America. Remember, that South of the Equator, the seasons are in the reverse of ours. For example, the best time to visit Argentina would be in the Latin American Fall months, March, April, and May.

Contact your business friend, agent, distribu-



selves? Indications are they did not have as good a time as they might—after all, their foremost memories seem to be of European hotel laundries! They sounded as if they had completed a harried, hurried business trip abroad; particularly to Europe where this is all-too easy to do as the countries lie cheek-to-jowl.

One of the above executives visited five countries in eight days. He transacted most of his business at the airport with his local distributor. He might have had time for a fast trip into town—but not to see the sights. He hardly had time to unlimber his camera. As for his light-



## AND PASSPORTS

MUST BE WELL-PLANNED. IT ISN'T JUST A MATTER OF PACKING BAGS, ARRANGING CONTACTS AND ACCOMMODATIONS, AND SITTING BACK. AN EXPERIENCED TRAVELLER GIVES SOME HELPFUL POINTERS.

tor, customer, or associate in the various countries you want to visit. Give him a chance to arrange his itinerary so he can be there when you arrive. (Most European business men travel much more than we do.) He can also send you plenty of advance information on market characteristics peculiar to his own country. In Greece, for instance, during the Summer months, business hours are from 9:00 A.M. to 12:00 noon. Then there is a five-hour break and business is resumed from 5:00 to 7:00 P.M.

He usually will meet you at the plant. Thomas C. Ballagh, President of Ballagh & Thrall, prominent Philadelphia export firm suggests along these lines: "It is quite helpful if you will have exchanged photographs well in advance of your trip. Then, when you step off the plane, you will recognize each other and it will make for a pleasant start to your stay."

He will make hotel reservations for you. Since he usually is a prominent local business man, he will know the local hotel manager usually on a first-name basis. Sometimes he can work wonders where every other avenue of approach has failed—particularly if you have to change your itinerary in a hurry. Other sources for hotel reservations are your travel agent, of course, or any of the international airlines provided they fly to your destination.



But it is important to note that in many foreign cities—particularly in the Far East—there usually may be just one first-class hotel by our standards. This is where your foreign contact comes in handy. He knows the ropes you do not. In one unnamed Middle Eastern country, there was just one good hotel in the largest city. The hotel clerk refused to honor my confirmed reservation at 3:00 A.M. But it was my local



business friend who came to the rescue. Then, suddenly, my reservation was "found."

It's comfort that you will be looking for on these overseas trips—and your local contact will provide it when he meets you at the airport—usually with his own car and chauffeur. You will appreciate this, once you have made the trip from Dum Dum airport to downtown Calcutta on the airport bus—particularly on a hot, humid evening.

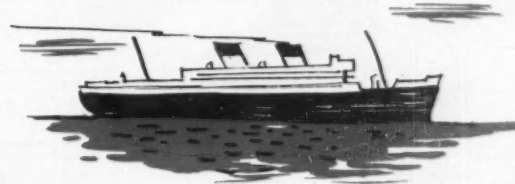
Watch out for special religious holidays in planning your trips. These can come quite unexpectedly. In Latin America, feast days of the church are more widely recognized than in the United States. "They often have official recognition, particularly in the cities of secondary importance," says the Commercial Travelers' Guide to Latin America, last published by the U. S. Department of Commerce in 1931, but

still a valuable book. Easter Week is celebrated in full in practically all Latin American countries and business is completely suspended. In Bombay, a few years ago, I ran into a two-day Hindu holiday, followed on the third day by a Parsi one. The fourth day was Sunday.

Every country has its equivalent to George Washington and others of our own national heroes. These holidays can be bothersome, particularly if you are on a tight schedule—and you begin to wish there were not quite so many heroes as common folk. One New York City bank publishes a booklet that lists national and religious holidays in most foreign countries. This can be quite helpful in planning your itinerary.

Travel light. Assuming that you will be travelling by plane, remember that unless you are on a round-the-world flight, your baggage limit is 66 pounds on a first-class flight—and 44 pounds on tourist class.

On most extended trips you will need both tropical and Winter clothes. Let's assume that



your business will take you to most of the countries in Western Europe during May, June, and July. For the Northern countries in Scandinavia, you will need Winter clothes and a top coat. (The Swedes say they have a white Winter and a green Winter.) You will need tropicals in Portugal, Spain, Italy, Greece, and Turkey.

*Continued on page 136*



# 14 important ratios

IN 12  
RETAIL  
LINES

*A sound financial structure is important to business at any time, but particularly so in these days of heightened competition. These fourteen ratios provide a unique way for a retailer to compare his operations with his competitors'. The ratios have been compiled annually for more than 20 years by Roy A. Foulke, vice-president of Dun & Bradstreet, Inc. Ratios for wholesalers will appear in November, manufacturers in December.*



SHOPPING CENTER, WILMINGTON, DELA.—DEVANEY PHOTOGRAPH

Line of Business (and Number of Concerns)	Current Assets to Current Debt Times	Net Profits on Net Sales Per Cent	Net Profits on Tangible Net Worth Per Cent	Net Profits on Net Working Capital Per Cent	Net Sales to Tangible Net Worth Times	Net Sales to Net Working Capital Times	Average Collection Period Days	Net Sales to Inventory Times	Fixed Assets to Tangible Net Worth Per Cent	Current Debt to Tangible Net Worth Per Cent	Total Debt to Tangible Net Worth Per Cent	Inventory to Net Working Capital Per Cent	Current Debt to Inventory Per Cent	Fund'd Debts to Net Working Capital Per Cent
FOR TWELVE RETAIL LINES—1954—MEDIAN AND QUANTILES														
Clothing, Men's and Boys' (183)	6.82 4.05 2.38	6.17 2.69 1.02	11.67 5.66 1.73	16.49 7.70 1.94	3.12 2.40 1.74	3.96 2.74 2.06	**	4.4 3.6 2.6	5.5 11.6 26.2	15.4 28.7 49.7	40.3 74.0 153.3	59.1 85.8 114.8	24.7 45.0 69.7	11.3 33.1 69.7
Clothing, Men's and Women's (90)	7.66 4.36 2.62	4.86 2.30 0.97	10.65 5.29 2.05	16.68 8.12 2.24	3.28 2.32 1.53	3.95 2.93 2.19	**	5.3 4.3 2.7	7.7 13.1 25.9	10.8 24.8 46.1	47.9 63.0 74.0	47.1 66.2 96.2	25.8 56.1 83.8	11.9 21.2 67.5
Department Stores (392)	5.47 3.58 2.60	3.63 2.17 0.96	9.39 5.44 2.96	13.28 8.18 4.40	2.58 2.69 2.15	4.79 3.79 3.13	**	7.5 6.0 4.3	14.2 25.8 46.0	15.9 25.7 44.0	41.3 59.7 84.5	50.0 66.7 91.8	35.8 59.8 86.2	15.6 27.8 48.2
Furnishings, Men's (50)	9.26 3.79 2.48	4.99 1.84 0.17†	9.44 4.72 0.40†	8.79 5.32 1.82†	3.35 2.33 1.46	4.01 3.12 1.94	**	3.4 2.8 2.5	5.0 14.7 27.6	9.9 26.8 62.1	51.1 78.1 130.3	66.4 94.7 139.4	20.1 42.8 58.1	8.8 37.3 47.6
Furniture (54)	7.27 3.20 1.97	3.51 1.38 0.15	9.22 3.58 0.35	11.11 4.75 0.61	3.67 2.36 1.90	6.29 3.18 2.30	**	5.1 4.3 3.0	4.3 10.0 23.7	16.4 31.4 76.8	49.7 84.2 140.1	51.3 69.2 105.0	30.0 57.5 99.1	11.0 31.6 56.6
Furniture, Installment (116)	6.98 3.83 2.27	4.57 2.24 0.34	7.59 4.26 0.85	9.97 4.30 0.78	2.59 1.75 1.24	2.91 1.95 1.24	86 157 231	7.2 5.1 3.9	4.3 10.3 25.1	15.5 31.6 68.3	40.9 60.6 122.6	27.3 42.2 63.3	49.6 94.6 170.6	10.9 20.6 33.2
Groceries and Meats, Independent (60)	2.86 1.86 1.24	2.48 1.15 0.44	20.61 12.11 4.35	40.09 25.04 7.58	15.78 10.49 7.55	41.69 23.37 12.78	**	27.5 19.0 15.3	26.5 51.2 80.5	29.9 43.7 83.5	40.0 67.7 116.7	77.4 119.7 204.5	49.7 77.4 135.4	21.8 51.7 110.3
Hardware (49)	8.20 4.53 2.64	4.46 2.84 0.71	9.67 5.94 1.62	16.69 6.14 2.19	3.43 2.09 1.55	5.40 2.81 2.36	**	4.4 3.9 3.0	4.5 15.7 34.1	11.6 22.6 48.2	31.4 53.6 121.6	58.6 76.0 109.2	19.5 35.3 60.7	18.6 25.5 49.4
Lumber (29)	7.51 3.32 2.32	2.72 2.09 0.49	8.80 6.85 1.33	10.36 8.50 1.74	3.88 2.74 2.30	4.57 3.43 2.74	52 70 83	6.2 4.4 3.9	13.8 22.4 35.6	13.4 31.6 57.9	27.2 57.4 61.5	58.2 72.6 92.0	24.7 59.9 88.9	6.8 24.7 70.5
Lumber and Building Materials (103)	6.88 3.41 2.38	3.90 1.97 0.77	13.70 6.92 2.53	21.95 8.59 3.51	4.17 2.99 2.18	5.69 4.22 3.54	35 45 74	8.6 6.1 4.4	13.4 19.2 33.9	15.6 31.2 45.3	32.3 71.7 118.2	46.4 65.6 89.9	38.0 65.3 106.7	7.5 19.2 44.3
Shoes (82)	5.08 3.12 2.09	5.68 1.97 0.38	15.76 5.69 1.60	24.64 8.12 1.77	4.30 3.38 2.14	7.55 4.27 3.28	**	6.7 4.2 3.4	6.4 15.0 36.7	17.5 30.3 66.7	39.5 73.4 143.6	76.3 108.0 145.6	28.4 45.2 73.7	21.7 29.6 71.1
Women's Specialty Shops (197)	4.95 2.72 1.94	7.60 2.37 0.60	12.19 6.86 2.72	22.37 11.12 3.33	4.42 2.93 1.90	8.09 4.73 3.12	**	9.3 6.5 4.5	10.5 20.2 39.1	19.4 36.1 69.7	49.5 73.7 144.2	40.7 69.2 95.1	55.6 91.9 128.4	12.8 27.5 58.4
DEPARTMENT STORES—BY SIZE (TANGIBLE NET WORTH) CLASSES—MEDIAN ONLY														
Under \$200,000	3.88	3.12	7.03	9.35	2.78	3.29	**	4.1	23.0	26.7	67.0	89.6	40.9	26.6
\$200,000-\$500,000	3.49	1.68	3.90	5.05	2.67	3.70	**	5.2	20.5	25.5	74.5	73.9	49.3	37.9
Over \$500,000	3.46	2.19	5.83	8.54	2.66	3.94	**	7.0	29.1	25.5	52.5	59.2	70.3	24.5

\*\*Not computed; necessary information as to the division of sales between cash sales and credit sales was available in too few cases to obtain an average collection period usable as a broad guide.

†Loss. Definitions of the ratios and the various terms used may be found on page 147.

Kroehler's merchandising division discusses a fresh new look in furniture

**"Plastics molded by General American helped us create a revolution in furniture"**

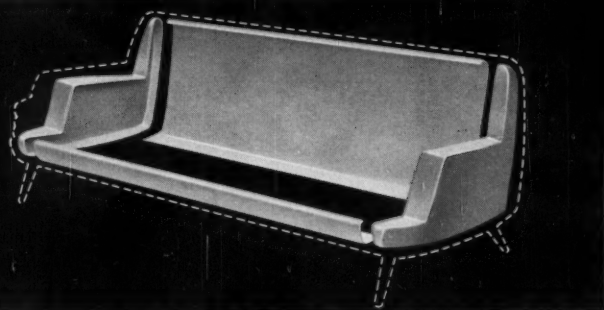
"Make it different . . . make it better . . . all the way through."

"That's what our salesmen told us . . . and that's what we did. We thought about new ways of building furniture—and we took our problem to General American. We found we could have reinforced fiber glass molded into a strong shell-like frame by General American's Plastics Division . . . that they could apply tough, easy-to-clean vinyl directly to the fiber glass to form a durable, good-looking covering.

"We discovered that this new construction gave us complete freedom in designing furniture. We used luxurious fabrics and foam rubber padding to create upholstery as comfortable as it looks. As a result, this new furniture, we found, was not only new in design, but has great strength, is easy to care for (washable, fadeproof and scuff-resistant), attractive in appearance and wonderfully comfortable to use . . . thanks to contour molding.

"Soon, you'll be seeing Kroehler's 'Revolution in Furniture' (under the Valentine-Seaver label) in your favorite store windows. Look it over. You'll like it."

*it pays to plan in plastics molded by General American*



... And this is the reinforced plastics frame



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Facilities unmatched anywhere: injection, compression, extruding and vacuum forming, reinforced plastics, painting and assembling



## ZIRCONIUM

*Continued from page 44*

more important than tensile strength in determining whether a given application will be satisfactory; and, quite aside from the question of temperature, unusual erosion conditions, process variations, and other factors encountered in the field may change the application picture a great deal.

This applies, of course, to many materials (see August, page 36). But there are other reasons for being particularly careful about zirconium:

Much of the information on zirconium now in print is based on tests with iodide material, and it is more like a cousin than a twin to the Kroll-process metal. Kroll-process zirconium is not as ductile as the iodide, and not quite as corrosion-resistant but it is twice as strong.

Furthermore, it's too early to close the door on zirconium for any application solely on the basis of current performance data. Alloying holds out considerable promise for improving its strength at elevated temperatures; and protective

coatings for providing corrosion and abrasion resistance.

Battelle Memorial Institute reports, for instance, that minor additions (2 to 5 per cent) of aluminum, tantalum, vanadium, and titanium all help zirconium to retain its strength as the temperature rises above 650° fahrenheit. Titanium is particularly effective in the 650° to 1,300° range; and the other three may prove helpful for service above 1,100° fahrenheit.

Unfortunately, alloying does not have a beneficial effect on zirconium's corrosion resistance. Says the Bureau of Mines: "Although alloying increases physical properties, in every instance it lowers corrosion resistance."

That makes protective coatings especially important, and a number of them are being developed, including porcelain-enamels and electroplated deposits.

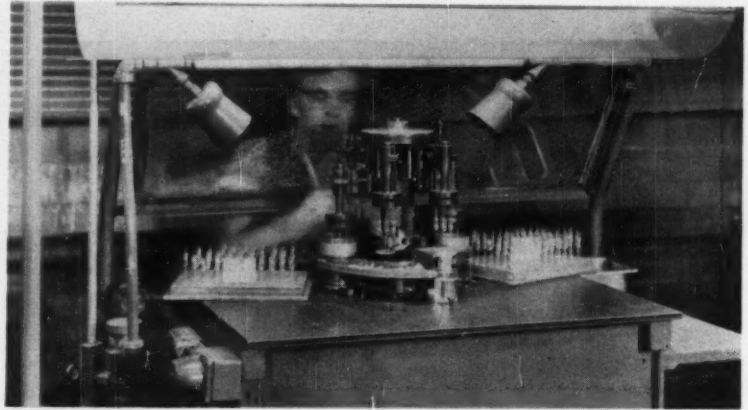
For several industrial applications, zirconium's lack of corrosion resistance at elevated temperatures is an advantage rather than a disadvantage. Some of the metal's

best-established commercial applications take advantage of this characteristic, using the metal in powdered form to obtain the highest degree of reactivity. Zirconium metal powder does very well as an igniter in flash bulbs (see photograph, below); as a "getter" or gas-remover in electron tubes. It has also proved useful as a fluxing agent in the preparation of ceramic-to-metal seals.

Metal Hydrides, Inc., reports that powdered zirconium is also used in

pyrophoric materials in combination with nickel; and that it helps to improve the strength and hardness of copper and magnesium alloys.

Zirconium is, then, a promising material. Not a giant among metals, perhaps. But a solid citizen. If it is accepted for what it now is—a material with many excellent qualities and several severe limitations—it can prove a valuable ally for production and a useful addition to many products.



Zirconium powder needs special handling, but is one of metal's most useful forms. Here, Sylvania worker, using it to coat flash bulb filaments, is protected by glass shield, Kidde carbon dioxide fire extinguisher system.

**Western Electric Company, SPRINGFIELD GARDENS, LONG ISLAND, N. Y.** This new distributing house, now in construction, will become the supply center for the busy Long Island area of the New York Telephone Co.

The building, 2 stories high, will have 360,000 sq. ft. of floor space and comprise warehouse

facilities in which some 8000 different types of items will be stocked. It will also provide a repair shop for servicing used telephone equipment, a cafeteria and other personnel facilities. The plant is on a 12 acre plot with parking facilities and will be attractively landscaped.

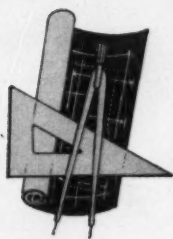
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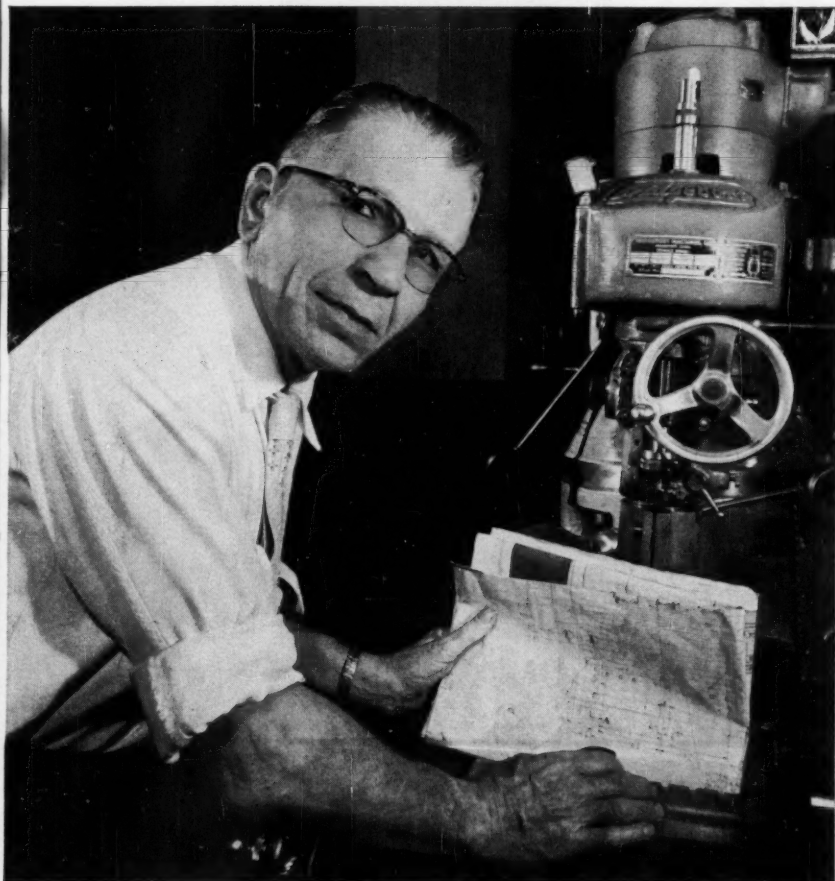
# Craftsmen of the 20<sup>th</sup> Century

No. 8 of a series to introduce you to some of industry's outstanding plastics craftsmen



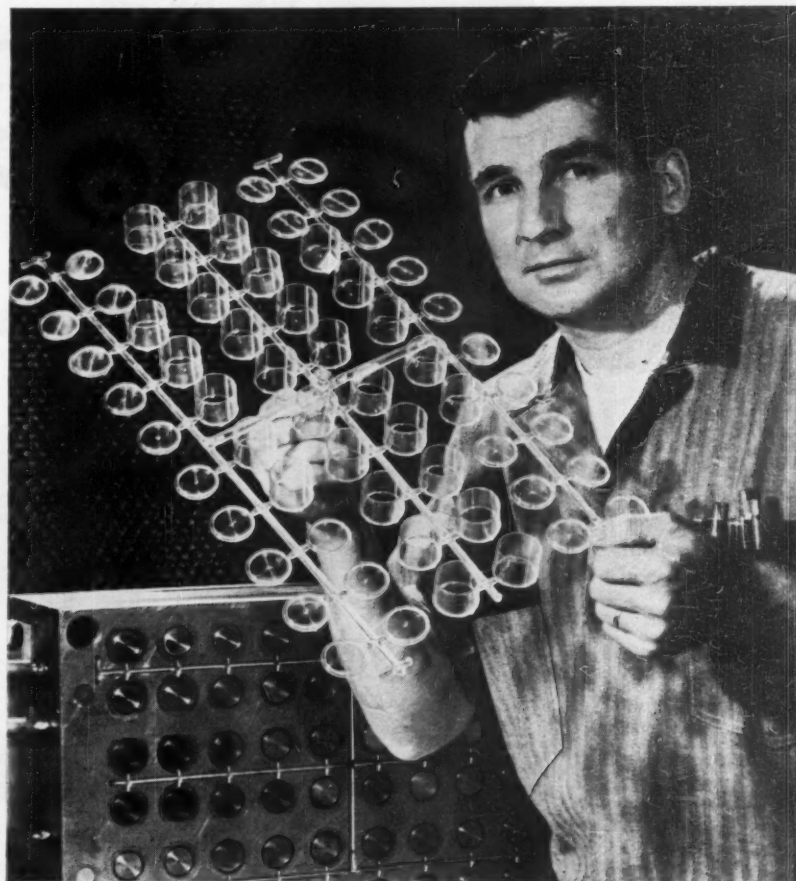
Inspired by the materials at hand, the artisans of other ages have enriched the world with treasured objects of silver and iron, wood and glass. Today new materials are inspiring a new group of craftsmen. Working with the fabulous family of plastics, these men are molding beautiful and useful products that are serving every industry, every home. Two of these 20th century artisans are pictured on this page. Monsanto, a major producer of high-quality plastic materials, salutes these craftsmen who are helping to mold America's tomorrow.

When your plans call for plastic parts or products, consult an expert custom molder



**William J. Drake, Chief Engineer, Santay Corporation, Chicago**

Ever since the first injection molding machine entered the Santay plant in 1935, Mr. Drake's job has been molds. A recent and particularly difficult feat was engineering a mold for an aircraft microphone boom. The functioning portion was a curved rack-and-pinion core that moved through an arc. Mr. Drake's mold has produced more than 70,000 parts with no more than average maintenance. He also designed a mold for a 12" square air conditioner grill, with 28 horizontal bars, which fitted perfectly in all four positions.



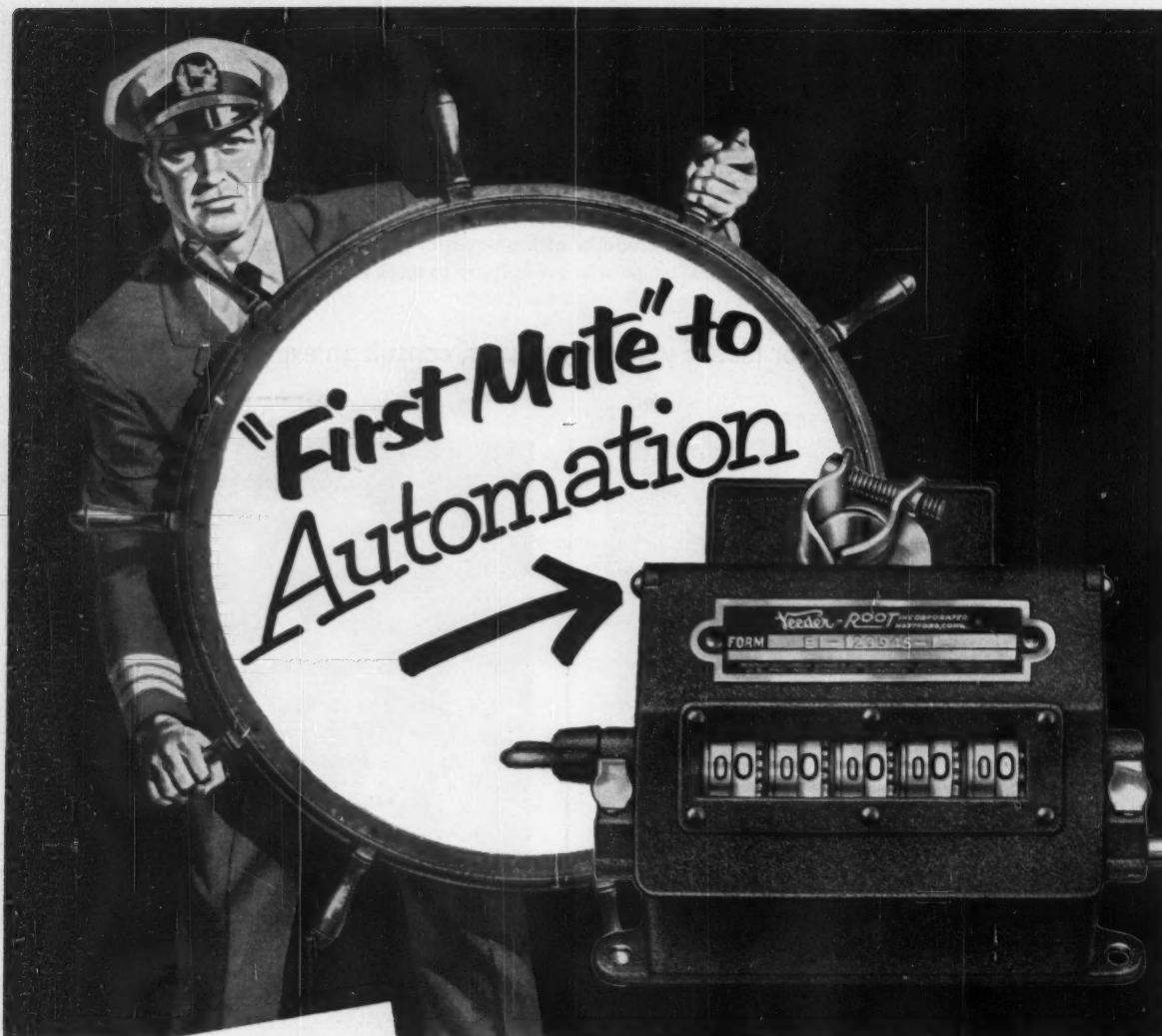
**Peter Pfaff, General Manager, Wilpet Tool & Mfg. Co., Kearny, N.J.**

Back in 1934 Mr. Pfaff entered the field of plastics molding as an apprentice tool maker. Ten years later he joined Designer William L. Niclaus to found Wilpet Tool & Mfg. Co., specialists in the production of custom-styled plastic packages for industrial and consumer items. A typical Wilpet team project was to design a mold to produce a tapered packet case in large quantities at minimum cost. The 60-cavity mold they engineered turns out 100,000 finished packages a day on one 16-oz. press.

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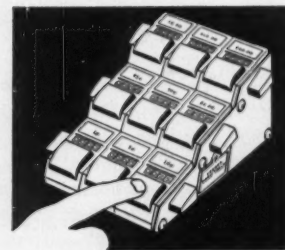
In figuring out new systems of automatic electrical control, Veeder-Root Control can supply vital connecting links. For instance, this Predetermining Counter can be hooked into such a system to light a light, ring a bell, or actuate a mechanism to stop a machine or process at any pre-set point. And there are many other Veeder-Root Counters that can serve as "count-components" in almost any way desired. Or special counters can be designed for specific applications. Engineers in any industry, now engaged in working out automatic control systems, can count on Veeder-Root engineers to work with them on any problem where reliable facts-in-figures are needed.

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*Special Emphasis Feature*

# **The Fitful Beginnings OF OFFICE AUTOMATION**

*The new world of data processing is evolving so fast that executives are hard put to grasp the full content of its meaning as a different type of competitive tool.*

## **IN THIS REPORT** ↓

### **THE FITFUL BEGINNINGS OF OFFICE AUTOMATION**

This is what the field looks like to-day. A report showing the major problems and applications with a provocative glimpse at the early future.....page 57

### **SMALL INSTALLATION GIVES BIG RESULTS**

How to ease strain on production planning, get faster deliveries, produce quicker, more accurate daily sales reports for top management—a case study.....page 69

### **27 COMPANIES EVALUATE THE IMPACT**

A verbatim report of the reactions of companies who are trying to transform a concept into a reality. Consensus: Even small companies should study it.....page 77

### **PRODUCERS APPRAISE THEIR PROGRESS**

Manufacturers of integrated equipment are in a paradoxical situation. It's easy to sell hardware, tough to sell idea that thorough planning will pay off even more.....page 93

### **WHERE DO YOU GO FROM HERE?**

Here's a quickie file of books, films, meetings and conferences, and articles you will find invaluable. A direction-finder for alert executives.....page 105





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wearing you down?*

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# The Fitful Beginnings OF OFFICE AUTOMATION

*A keen new competitive tool for management is fast developing. Here  
are the implications of a concept that will affect your whole operation.*

**I** FEEL the same way I did when punched cards came along. This is it—this is automation."

This enthusiasm is gushing from the vice-president of one of the most progressive companies in the country. But his perspective is as far off to-day as it was with the tremendous breakthrough made by the punched card concept. The fantastic advances made during the last few years are only the beginning of "it."

The next decade will see breakthroughs in automatic processing and transmission of vital business data beyond the imagination of management to-day. These will be of such importance as operating tools that whole organizations will be replanned. Entire departments will be obliterated, reappearing in a different form and performing different functions. Incredible? It's beginning already. . . . A handful of manufacturing companies are planning or building now data processing centers as separate entities, designed to collect and process business facts. One company's planning envisions a data processing center in a part of the country where they have no manufacturing operation whatsoever. It will function as the hub of a vast data collection network, assimilate the information and then transmit it in analyzable form back to the plants, central executive and district offices.

Research management for the two major wire services, American Telephone and Telegraph Co. and Western Union, talk matter-of-factly about these fast moving developments. One possibility for larger companies, as they see it, is to set up sub-collection points at strategic locations all over the U. S. Information from regional

plants and sales offices would be transmitted using conventional five-channel teletype tape to these sub-centers. Here, the information would be automatically converted to data language on a computer medium—punched or magnetic tape or even punched cards, depending on how much data analysis or storage is required locally. Much diverse information would be consolidated and classified at the sub-center—inventory, production and payroll data, for instance—before transmittal to the main data processing center. At the main center the partly digested data would be completely assimilated using general purpose electronic computers and auxiliary hardware. In an incredibly short time, concise reports would be on executives' desks, ready for action.

That's the communications aspect of data processing. The technological aspects of it could hardly be called new—the wire services have been able to segregate and classify data for some time using automatic switching devices, for example. What is new is that industry is just beginning to realize the possibilities of these techniques as a management tool for fact gathering.

In the processing, as distinct from the data transmission field, similar strides are being made in developing equipment that will eventually turn data processing into a system akin to automation in the plant. The ultimate objective is to create an even flow of raw data which as it pours through "converters" will be transformed into finished products automatically—invoices, bills of lading, daily sales analyses, while storing information to grind out monthly and semi-annual reviews—in other words, automation. The gleam in the eyes of the research staffs of the office equipment manufacturers reflects a longtime ideal, the day when data will be recorded manually only once.

But none of the experts allow themselves to be beguiled into thinking that that day is tomorrow. And for two very good reasons. One is that the current stage of equipment development is already ahead of management's comprehension of what it can do. The second reason is that these developments have moved so quickly that

many of the electronic and electro-mechanical producers in the office equipment industry, along with the wire services, are beginning to wonder whether they might not profitably pause to modify their individual approaches and develop compatible equipment—a painful step which would help to turn the common language concept (the key to office automation) into a reality.

These problems are illustrative of the growing pains of this broad concept. As a matter of fact, there are probably thousands of keen executives who should be pushing for the fruits of the concept who don't really know what is involved. And there are thousands of medium-size companies who could be benefiting now through faster, accurate marketing data as well as reduced clerical expense who have not even studied the present applications of the concept.

The word "concept" is being intoned so monotonously here because the objective of office automation is too often buried under the hardware. The objective is to produce all reports management requires for competitive and legal purposes faster, more accurately. Many companies and particularly small companies can move a long way on this road without buying new equipment solely by studying and simplifying their currently inefficient systems and procedures.

The automation concept carries this logic one step further by reducing manual handling of data through the introduction of equipment so integrated that data flows through machines rather than people. The nature of the equipment, whether electro-mechanical or electronic, depends on the nature and the volume of the data it is processing. Popular mythology to the contrary, a high-speed general purpose electronic computer is not a *sine qua non* of integrated data processing any more than are staff assistants to company officers. A big computer is a *must* only if you have enough volume to justify it.

No one has taken more pains to impress this fact on management than the computer manufacturers. As one of their top men put it recently,

*The articles in this special emphasis section were prepared for publication under the direction of senior editor James K. Blake of the Dun's Review and Modern Industry staff.*

—The Editor



IBM leadership in action . . .



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**IBM**

**DATA  
PROCESSING**

*"The equipment is already ahead of management's comprehension of what it can do . . ."*

"Thank God the hysteria is dying down." Another says, "Our orders are now on a sounder basis." What they are referring to is the unprecedented phenomenon of nearly every status-conscious company in the country thronging to order a computer because that was the forward-looking and fashionable thing to do. Early last year the head of the methods department of one of the largest and sanest companies was ushered into the president's office. "This afternoon," said the president, "I'm going to order the largest computer on the market." Blanching, the methods man explained that to integrate the data processing, of which the computer would be one component, might require two years planning. The computer was ordered and delivered six months later nonetheless and the prospects are that it will soon be running economically . . .

The point is that integrating data processing without electronic computers requires painstaking previous planning, the length of time depending on the dimensions of the data—its source and its volume—and building a large computer into act requires even more.

While waiting for industry to catch up with their technical achievements, the equipment producers have a few problems of their own. The major problem involves what has been called optimistically "the common languagetape." The problem boils down to this: in order to integrate the various pieces of automatic equipment, there must be a medium containing data in some code form which will flow from machine to machine and activate them. Ideally, this medium could also be transmitted from plant to plant via wire networks. The equipment manufacturers, however, in the early innings of the game, have been producing equipment in several different languages spoken at different speeds. It is possible to-day to buy equipment that operates on a five channel tape (one language), six, seven and eight channel tapes (other languages).

Most of the large computers operate on more than five channels. But if you are building those into your system, the odds are that you'll want to communicate much of that data via wire transmission. And, at the moment, this means that you must convert, say, your data from seven channels to five, because five are the number of channels the wire people are equipped to handle.

In effect, this means that a number of what might be termed *conversion units* must be built into the system so that you can switch gears, instead of the ideal system which would require one channel, one tape, one speed from beginning to end. It is inevitable, however, that these disparities will be ironed out, despite the fact that currently each manufacturer appears to be wedded to his channel number for what seems to him to be perfectly valid reasons.

These adjustments, again, are signs of the revolution in data processing. Another sign, this one small and not so important, is the polite though intense campaigns being waged by various manufacturers to name the baby. The term "integrated data processing" was first used to describe the concept by a U. S. Steel methods man at an American Management Association conference. This term was then merchandised heavily by a number of equipment manufacturers and forms producers. Other companies have been plumping for "automatic" or "electronic" data processing. Regardless of the name, the objective is the same.

While a few pioneering companies have been receiving an enormous and well-deserved amount of publicity for their adventurous leap

into automated data processing, most companies are proceeding tentatively, step by step, and system by system.

A typical example is the installation at the Rockwell Manufacturing Company which makes it possible for Rockwell to process an order in one day, rather than the week or more it required under conventional procedures. Although Rockwell has two divisions, its venture into near-automation was limited this year to one system, order processing, in one division, Delta Power Tool.

Under its former system, there were three geographical areas where sales orders were written. Multipart order invoices were typed manually at each location and processed there

*Continued on page 60*



*Three teams integrate Rockwell's data processing*

The complexity of even a limited application of integrated data processing is greater than management usually appreciates. Because so many company departments are affected, hardware producers and independent consultants usually sell the idea first to top management.

When W. F. Rockwell, Jr., president of the Rockwell Manufacturing Company, was approached by an executive of Shaw-Walker's Methods Consulting Div. with a plan for integrating his sales order processing, here's what happened: Rockwell (center, top) huddled with his Executive Committee—from left, Munro Corbin, controller; F. P. Maxwell, V-P in charge of Delta Power Tool Div. (with sign); R. J.

Neidengard, sales office manager, and, not shown, L. A. Dixon, Exec. V-P, and L. A. Dixon, Jr., V-P in charge of Meter and Valve Division.

Out of these sessions came the go ahead signal for a working committee, lower right, formed by the supervisor of mechanical accounting, the sales staff assistant, the director of methods and procedures, and the assistant controller.

They, in turn, worked extensively with the group at left: Shaw-Walker for over-all planning; IBM for tying in the equipment; AT&T and Bell for data transmission; and Standard Register for the precision-designed forms required. Total planning time: about six months.



# Stop unaccountable inventory shrinkage with *Cummins* controls

Everyone with an inventory has inventory shrinkage. Spoilage, obsolescence and scrap are some of the known causes. But everyone with an inventory also finds, at each audit, an additional shrinkage that is not accountable.

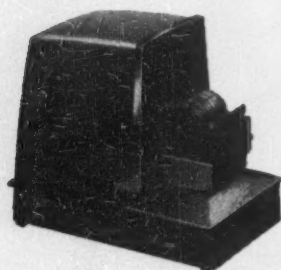
Unaccountable inventory shrinkage can be caused only two ways—by paying for something you don't get or shipping something you don't get paid for.

Cummins Controls plug both leaks. Cummins Invoice Canceling prevents accidental double payments, reduces accounting costs and provides a mechanical control that saves the chief accounting executive considerable time that would otherwise be spent in routine surveillance. It also provides maximum safety from dis-

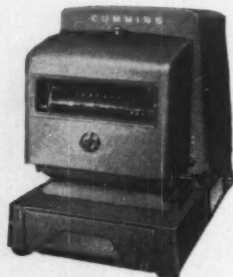
bursement fraud—the greatest single source of loss to American business.

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On the basis of a 10 percent profit on sales, every dollar saved in reducing inventory shrinkage is worth at least \$10 in new sales. For full information on these Cummins systems for controlling inventory shrinkage, mail coupon or consult your telephone directory for the name of your nearest Cummins representative.



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Cummins Order Control Perforator numbers order sets consecutively with holes you can read, gives absolute control over all business transactions, permits easy check outs.



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## "A cautious approach with limited objectives..."

through shipping and billing.

Their new system uses combinations of coded, five channel, punched paper tape, key punches, pre-punched cards, teletypewriters, card-to-tape machines and leased communications wires. In order to utilize this gear most efficiently, all order writing is centralized in the main Pittsburgh plant. There are seventeen basic forms in this operation. All but four are now automatically processed.

The important competitive weapon for management in this is the spate of accurate and detailed reports on shipments and new orders now coming through daily. And, a fact that every sales VP will appreciate, the higher degree of accuracy possible through punched-cards and tape means that the customer gets what he ordered and is billed for it correctly.

In another manufacturing company, nameless here, faulty preparation of order documents had reached a point where the wrong stock was being pulled from inventory on over 30 per cent of the orders. After "debugging" their new almost-automated order system, the rate of error dropped to less than one per cent.

At Rockwell the error rate was about two-tenths of one per cent.

A cost estimate for a system of this type might be in the neighborhood of \$60,000, including pro-rated purchases, rentals, forms and manpower. Savings could reach as high as \$70,000.

The cautious approach with limited objectives followed by Rockwell seems to set the pattern for the bulk of industry. Republic Steel Corporation, for instance, has set

up a committee reporting at the vice presidential level whose job it is to study every possible application of integrated data processing at all levels, from regional sales offices to the mills. Their planning is still fluid but after a year and a half of study of tape and punched-card equipment, they have ordered an intermediate-size computer for one of their plants. Depending upon their experience with this, they may orient their data processing so that all basic handling is done, decentralized, at the mill level or they may eventually centralize most data handling in Cleveland. Says their committee chairman, "It depends on how we progress..."

The Budd Company in Philadelphia has begun to integrate its systems and equipment, starting with accounts receivable and billing. On their former system for handling the related paper work, when the invoice was typed they "had nothing but the invoice." The majority of allied documents were all prepared manually—a familiar story to most office managers and an expensive one for management.

"Now," says C. H. Kimball, who heads the operation, "we know during the day that we are going to load a certain number of cars and whom they are going to. We make a program tape with the name and address and terms, order number, descriptions, quantities and extensions. The girl places a programmatic tape on the machine, presses the lever and from then on the machine only stops in three positions. There the girl types in the date, invoice number and the shipping point."

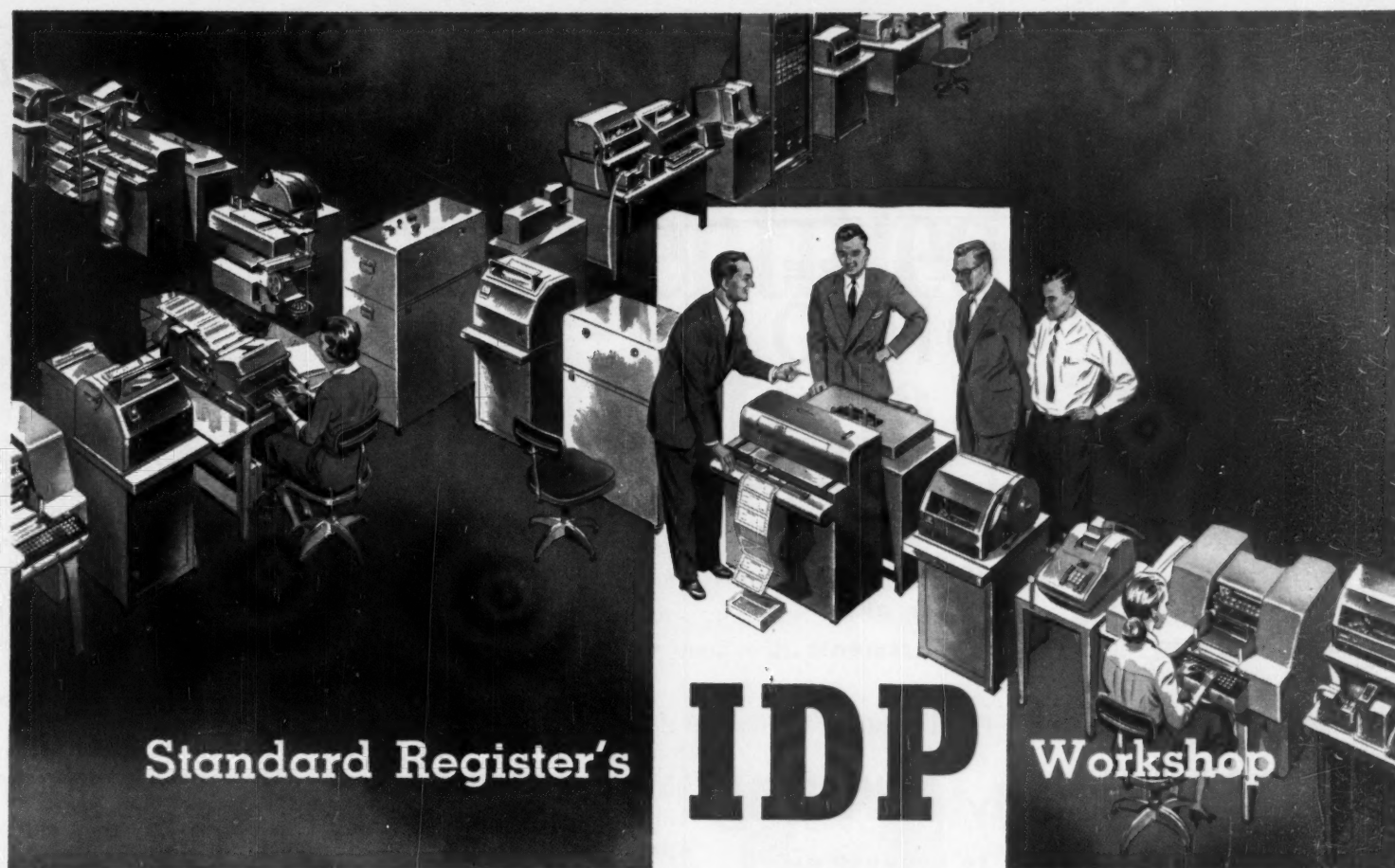
*Continued on page 62*



## The list of "common language" equipment is growing fast

Already, manufacturers have come up with an impressive array of "common language" equipment. Shown here are some of the pieces used at Standard Register's integrated data processing workshop in

Dayton. They include code sensing machines, add punches, reperforators, teleprinters and teletypewriters, Flexowriters, tape-to-card converters, Automatic Graphotypes. And this is only the beginning...



## ... Birthplace of your next sales weapon

Surprising as it may seem, the business forms your company uses may provide you with a sales tool of great value.

In recent months remarkable technical improvements have been made in paperwork handling. Foremost is the concept of automation known as Integrated Data Processing, or more simply, as IDP.

Use of IDP has slashed the time interval between order entry and shipment . . . in one case from 8 days to one. Errors have been eliminated. Inventory control . . . cost reduction . . . improved mill scheduling . . . these are only a few of the many benefits available through use of revolutionary IDP.

Because IDP often requires substantial changes in existing paperwork routines, Standard Register has created a unique workshop, the only one of its kind in the U.S. Here a company can pretest a proposed forms system on actual machines . . . try out variations . . . experiment with new techniques.

The Standard Register workshop is both a time saver and a money saver. But most important, it will show you an improved paperwork system so fruitful as to give you really important sales advantages over competition.

Why not delegate one or more of your assistants to look into IDP and how the workshop can serve you?



**You are invited to send for details of Standard's IDP Workshop**

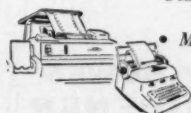
A brochure describing how the workshop operates, how a company may use it, and other facts is available on request. You will find it unusually interesting.

### THE STANDARD REGISTER COMPANY, DAYTON 1, OHIO

*Sales and Service Offices in Principal Cities*

**PACIFIC DIVISION, OAKLAND, CALIFORNIA**

Plants at Dayton, Oakland and Glendale, Calif. and York, Penna.



- Marginally punched continuous forms for key operated machines, tabulating equipment, and registers.



- Autographic registers—a complete line
- Zipsets—single units and continuous.



## Standard Register

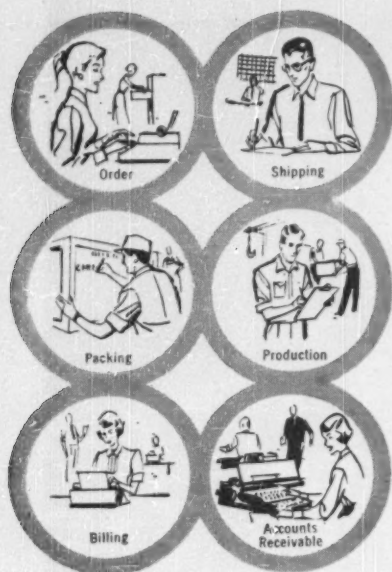
BUSINESS FORMS

**PS** Paperwork Simplification



# Picture of a Company

(It could be yours)



## BEFORE DITTO

.....

## 6 writings

to produce  
necessary forms  
for these  
departments...

## after DITTO® only 1 writing

to produce all  
forms for same  
departments.

### No Re-writing!

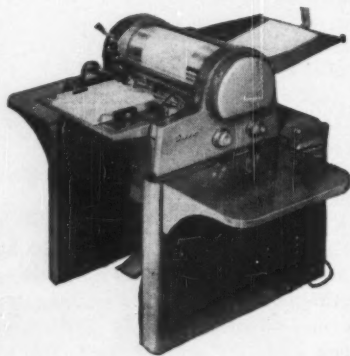


### ...and this is the DITTO Equipment that does it.

Imagine, every form needed for shipping, billing and even back orders produced without re-writing a single word—a tremendous savings in time, money, and man power. The same is true with purchasing, production, payroll and inventory control. With DITTO THE FIRST WRITING IS THE LAST. And, too, information unnecessary on any form is marked out by simple blackout mechanics. Each department is given the specific information it needs to do a better job, faster. Your company has more efficient control, copying errors are eliminated, money and time are saved.

Write today for facts on how

DITTO One-Writing systems can help you.



## DITTO one-writing system

.....  
DITTO, INC., 660 So. Oakley Blvd., Chicago 12, Ill.

At no cost or obligation, please send me complete information on a DITTO One-Writing System for:

☐ Order Billing ☐ Production ☐ Purchasing-Receiving  
☐ Payroll ☐ Hospital Admittance ☐ Other

Name \_\_\_\_\_ Position \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ County \_\_\_\_\_ State \_\_\_\_\_



*"Each manufacturer seems to be wedded to his own channel number."*

"Meanwhile the dual punches are picking up the data that applies to their particular category. Number one picks up all accounts receivable information. Number two picks up all data required by sales, planning and cost departments. The tapes end up in Tabulating where they are converted to cards for weekly and monthly reports completely automatically . . ." Savings on this operation—not counting the intangible benefits through faster, more accurate reporting—will approximate \$16,000 a year.

As compared with the Rockwell and Budd operations which involve only minor computing requirements, Montgomery Ward & Co.'s Chicago system centers about its computers. The program, spearheaded by Controller W. F. Otterstrom, employs six electronic calculators and one medium size computer. The "language" used in this installation is exclusively punched cards. The main reason is that prior to putting in the new system, all data was already on punched cards and retining those permitted a quicker

changeover. Some use of tape is a future possibility.

This system is used mainly in financial control and sales analyses. The equipment produces a profit and loss statement for each of 568 retail stores monthly, and for 26 districts, 6 regions, and the all-store total. This involves some 70 to 75 accounts for each store, plus departmental reports in which various elements of markup and inventory analyses are reported upon. Moreover, larger stores are covered by a profit and loss report by departments, of which there are up to 50 in each store.

The equipment also furnished invaluable combinations of data for sales analyses. For instance, the cards can be programmed to compare sales returns by the total selling area of the stores, the amount of business done by competitors and even by the square footage of the store front or by stores with basements or mezzanines!

To install this system, which will net the company in the neighbor-

*Continued on page 64*

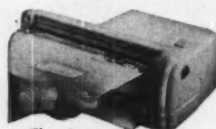


## Snappy Salesforce

It would be ridiculous for salesmen to risk results by waiting for the morning mail before hitting the street . . . But if other departments in your firm are delayed by slow mail distribution . . . a MailOpener by PB is practically mandatory!

It opens any kind of mail as fast as you can feed it . . . Shears a hairline edge off envelopes of any thickness without hurting the contents. Efficient, durable, the MailOpener saves time for the whole office, gives every day a head start. Models, hand and electric, for every office, even the smallest . . . Call the nearest Pitney-Bowes office for a demonstration or free illustrated booklet.

**FREE:** Handy desk or wall chart of postal rates with parcel post map and zone finder.



Electric  
Model LE



### PITNEY-BOWES MAILOPENER

PITNEY-BOWES, INC.  
1556 Walnut St., Stamford, Conn.  
... originators of the postage meter  
... offices in 94 cities in U. S. and Canada



Whatever your reasons for using intercom...

# You're entitled to these\* Executone extras

YOU EXPECT intercom to keep your employees at their desks more...to reduce costly and wasteful walking, waiting and interruptions...to locate roving personnel fast...to keep your switchboard free for important incoming calls...to save hours, tempers and to maintain customer good will. Yes, you expect all these, but —

Only the extras in every Executone system give you full benefits of intercom!



\* The world's most advanced engineering and design, for durable equipment as versatile as it is rugged. Voices are more distinct, crystal-clear, instantly recognizable. Executone has been far out front for twenty years—leads with more proven operating features and signalling and switching circuits.



\* A nationwide service organization, with factory-trained experts to survey your needs, install the most efficient system for you, thoroughly instruct your personnel in its use, and service equipment quickly and expertly on your premises, when needed.



\* "Chime-Matic"® signalling announces calls by soft chime and signal light. Executone is the electronic intercom that protects your privacy, that never interrupts, that lets you know who's calling, or has called—it's the system with *built-in courtesy*. These are just a few of the extras you're entitled to—and get—when you install Executone.

Why not fill out the coupon so your secretary can send it to us. It will bring you more information on the uses of Executone in your business. In addition you can receive "Talk Lines," an informative case history magazine telling how other companies profit from Executone. There's no obligation, of course.

Don't Walk...Talk!

**Executone**  
INTERCOM AND SOUND SYSTEMS

EXECUTONE, Inc., Dept. A-2, 415 Lexington Ave., New York 17  
It sounds interesting. Send me the following—at no cost or obligation:

☐ "Talk Lines"—Case history magazine

Information on:

☐ Executone features applied to my business

☐ Services available from Executone locally

☐ Switchboard Relief & Locating Personnel

☐ Inter-Office & Plant Communication

☐ High Noise Level Coverage

Name \_\_\_\_\_

Firm \_\_\_\_\_

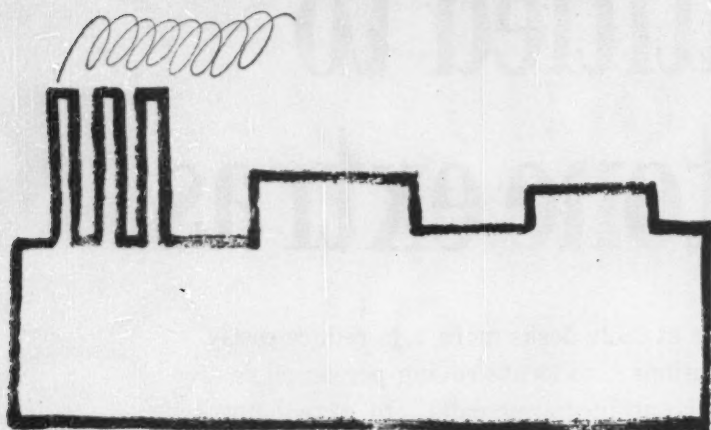
Address \_\_\_\_\_

City \_\_\_\_\_

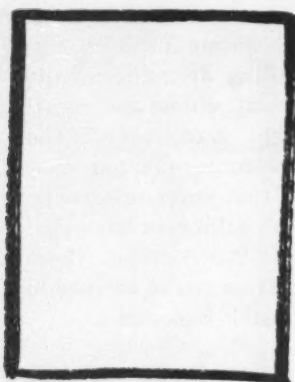
In Canada—331 Bartlett Ave., Toronto ©1955, Executone, Inc.



**neenah says,**

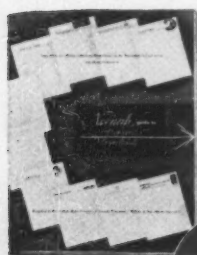


if your company is better



than your stationery indicates

...then it's time you used  
a fine rag bond by neenah



Would you like business stationery that is preferred by your customers? Then ask your printer for a free copy of the "Neenah Guide to Preferred Letterheads." It is based on a four-year survey that determined what businessmen preferred in letterheads.



**NEENAH PAPER COMPANY • Neenah, Wisconsin**

*"The broad impact of relatively small ventures...."*

hood of \$70,000 annually, required planning in roughly two phases.

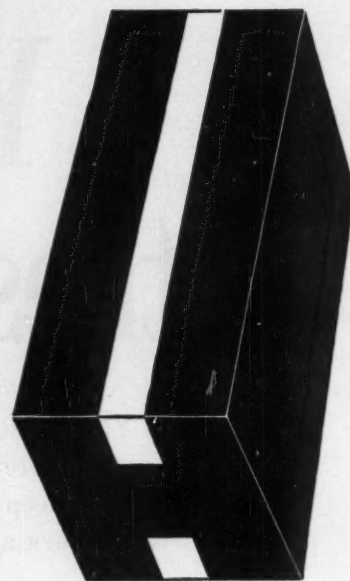
A team of two specialists worked on it about six months to develop an estimate of potential savings on various applications. Then, a team of four men in the accounting methods research department labored another ten months to develop the details. Next, the company's public accountants checked all the planning and finally a fully-programmed test run was made at the manufacturer's computer laboratory.

In this, as in the great majority of the adaptations of automation principles to data processing, management does not get any strikingly different information. Other than direct profit through substantial saving in operating costs, advantages to executives to-day accrue from the breakneck speed with which reports follow performance and greater opportunities for fast action. As a sales V-P puts it, "It doesn't think for me, but it gives me time to think!"

Reading through departmental operating reports of companies that have gone as far as their resources and equipment manufacturers' technology permit, one is struck by the broad impact of relatively small ventures into integrated data processing. Comments like: "Issue credits fast;" "better balanced inventory;" "fewer back-orders;" "reduced customer claims;" "greater personnel control—more data from lower operating levels—can pinpoint responsibility;" "automatic purchasing;" "more balanced plant work load"—these are amazing considering the modest investment in planning and new equipment, and the fact that seldom more than 10 per cent of a company's total data processing is affected.

These are the first, halting steps into a new era of management controls, an era where fully integrated data processing will tend to obscure the functional departments of payroll, inventory, production planning, for instance, as new techniques permit executives to base individual decisions upon their effect on the total operation of the company.

Page 69:27 Companies  
Look at IDP



**ONLY  
TWO STRIPS  
REQUIRED**

Because of its unusual strength, only two strips of TROJAN Cord Tape are required to seal many boxes. This saves time, material and labor in making the closure.

Let us send you full information about TROJAN Cord Tape, the official railroad, truck, express and parcel post box sealing requirements, and the name of a local paper merchant who can supply you with TROJAN Cord Tape. TROJAN Cord Tape may be applied with automatic sealing machinery... approved under

Rule 41 Uniform and Consolidated Freight Classification. Write today.



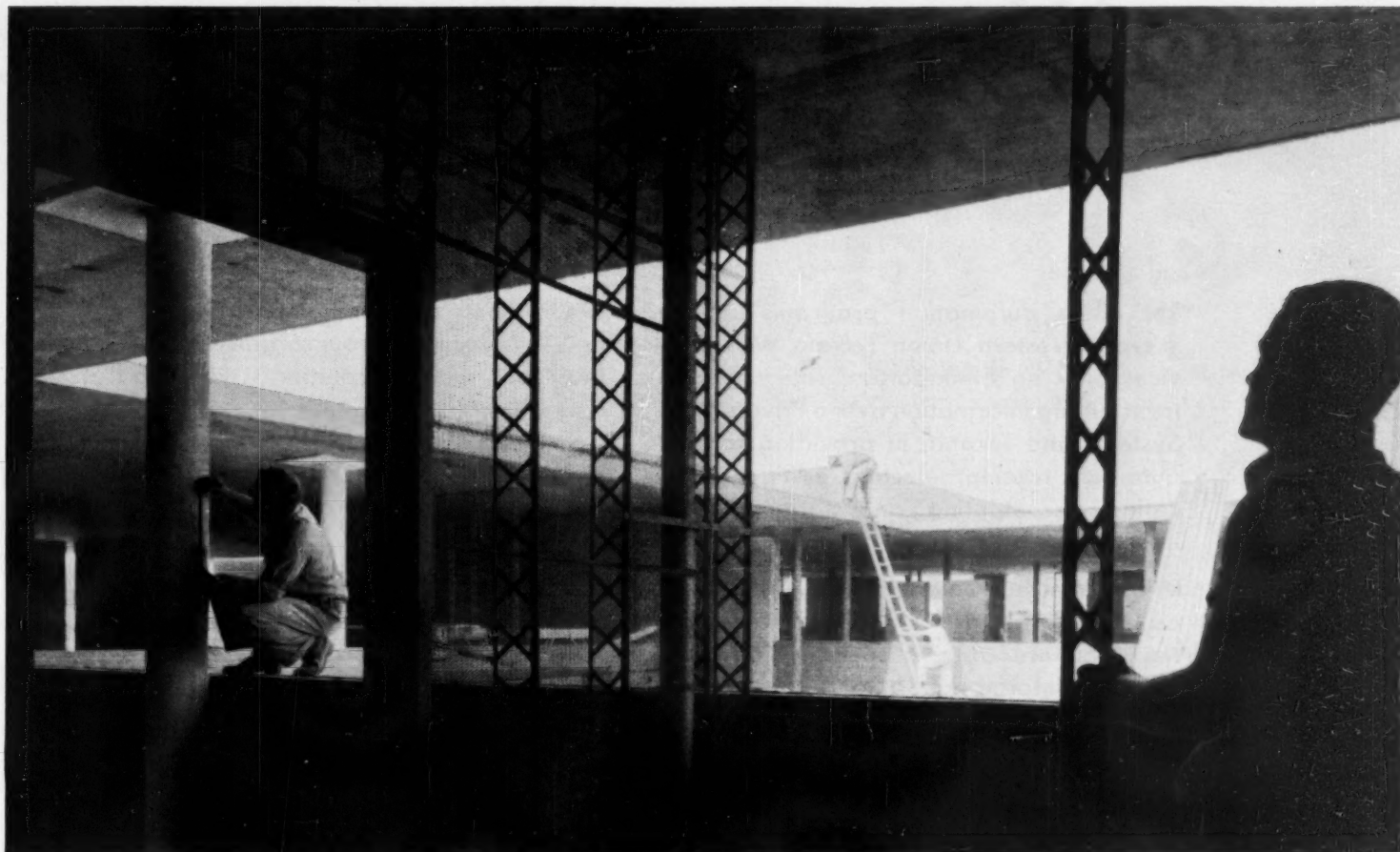
**TROJAN  
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**The GUMMED PRODUCTS COMPANY**

Specialists in the gumming of printing papers, foils and sealing tapes.

Main Offices and Mills: TROY, OHIO

Sales Offices: Atlanta, Chicago, Cincinnati, Cleveland, Los Angeles, New York, Philadelphia, St. Louis, San Francisco.—Distributors from coast to coast.



New \$550,000 Municipal Building, El Monte, Calif., will soon be ready for occupancy

## Building cost cut \$42,380 by Recordak Microfilming

More than 6,500 sq. ft. of additional floor space would have been required in El Monte's new Municipal Building if all records were kept in original paper form.

But the taxpayers were spared this expense by microfilming tons of deeds, court minutes, ordinances, etc. Now, these can be filed at the finger tips—any item found in a minute or two, and viewed in a Recordak Film Reader.

Furthermore, *protection has been greatly increased.* Recordak Microfilms can't be altered without detection; and duplicate films are stored in a remote bombproof vault. *All in all*, something to remember if you're planning to build or rent. Or if you'd like to convert up to 99% of your present filing space into working space.

### FREE . . . Valuable New Booklet

"Short Cuts That Save Millions" shows typical examples of how *over 100 different types of business — thousands of concerns —* cut record-keeping costs with Recordak Microfilming.

Every executive . . . every systems man will find this profitable reading; will see how many of the short cuts will pay off handsomely in his own business. *Mail coupon for your free copy today.* Recordak Corporation (Subsidiary of Eastman Kodak Company), 444 Madison Ave., New York 22, N. Y.

# **RECORDAK**

(Subsidiary of Eastman Kodak Company)

originator of modern microfilming  
—and its application to office routines



New Recordak Reliant does the job of 3 microfilmers. Saves film . . . is easier to operate

"Recordak"  
is a trade-mark

### JUST MAIL COUPON

RECORDAK CORPORATION (Subsidiary of Eastman Kodak Company)  
444 Madison Avenue, New York 22, N. Y.  
Gentlemen: Please send free copy of "Short Cuts That Save Millions."



R-8

Name \_\_\_\_\_ Position \_\_\_\_\_

Company \_\_\_\_\_

Street \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_



# WHY WESTERN UNION IS VITAL

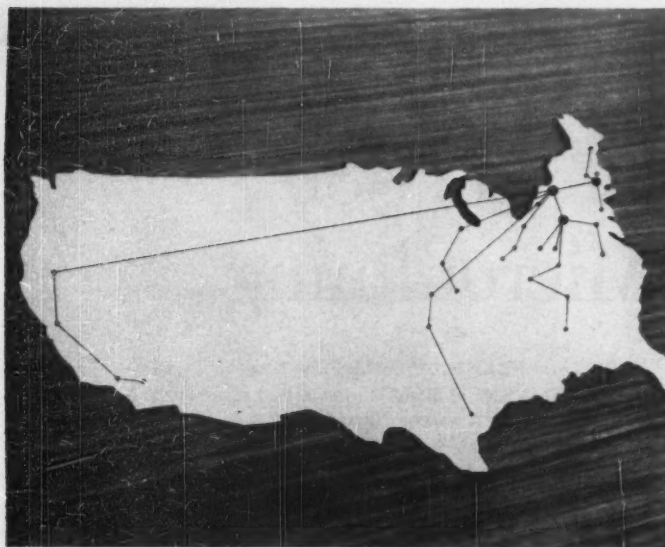
**I**N office automation programs of any type, Western Union Private Wire Services play an all-important role—first, in transmitting information over a Private Wire System, and second, in providing for the automatic routing, selecting, editing, duplicating, perpetuating, and storing of such information within the individual system.

With a Western Union Private Wire System as an integral part of your office automation, you are able to speedily distribute business information among the various

departments of your company, no matter how wide-spread your organization may be. Once such information is recorded, it can be transmitted to any or all points automatically, without further manual copying or retyping.

If you are considering office automation for your company, it will pay you to talk to Western Union communications specialists in the very first stages of your planning. In the meantime, here are certain factors you should think about:

Sylvania's Nationwide Office Automation System, Custom-Engineered by Western Union

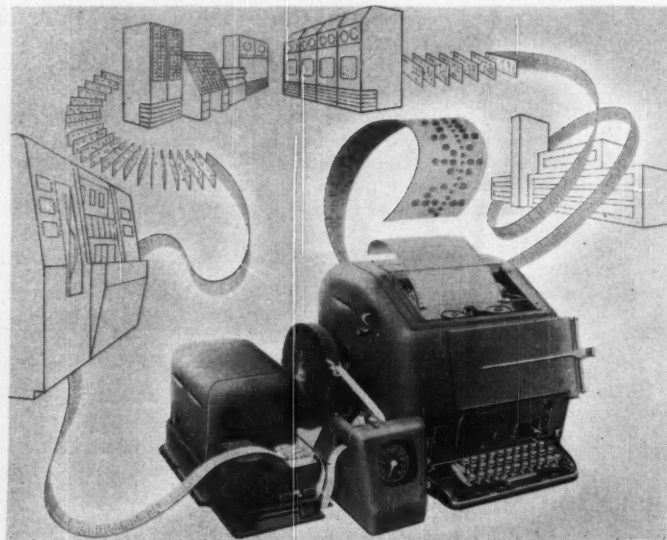


## complete coverage

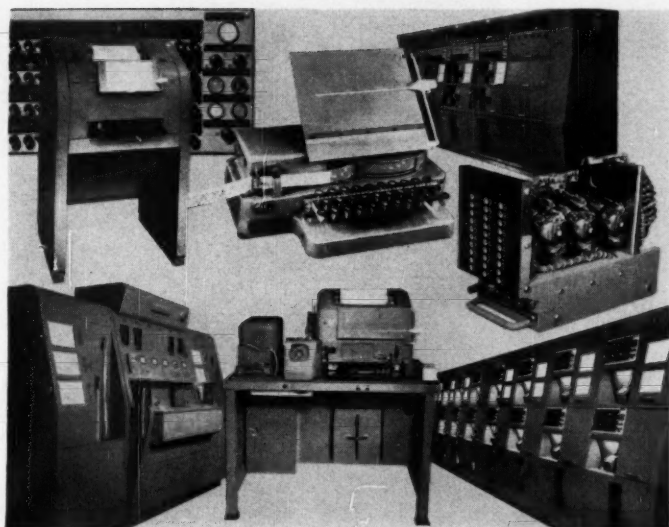
Through Western Union's nationwide private wire facilities, you integrate the functions and operations of every office, factory, and branch of your organization, no matter how far apart. Office automation by Western Union achieves complete, centralized and up-to-the-minute control of all the information necessary to the profitable operation of a business. It gives you instantaneous two-way communication between all points. In addition, Western Union, as a *nationwide* communications company, gives you a *single source* for all engineering, installation, and maintenance.

## compatibility with other machines

Perforated tape is the heart of telegraphic communications. It is a "common language" which is read and understood not only by all Western Union equipment, but by electronic computers, and by other modern business machines, including those using punched cards as well. It is the basis of any truly complete office automation system, because once the business information is placed on perforated tape, in any part of the system, no further manual copying or retyping is necessary. The information is transmitted, edited, sorted, routed, duplicated, and stored—automatically, according to a predetermined plan worked out by you and Western Union specialists to fit your particular needs.



# TO SUCCESSFUL OFFICE AUTOMATION

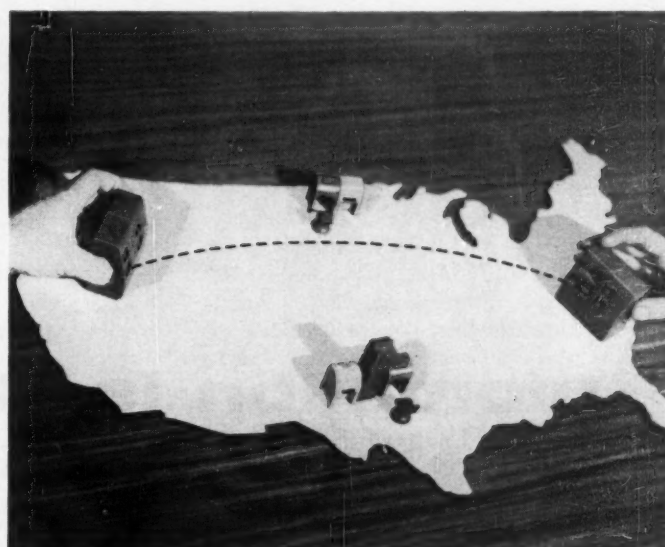


## versatile Western Union equipment

Office automation systems engineered by Western Union may include sending and receiving teleprinters, switching center equipment, tape-editing equipment, automatic numbering devices, sorting equipment, storage machines, and many other special and exclusive devices to give you the most efficient system. In addition, Western Union can custom-build or adapt its automation equipment to handle operations that may be unique to your particular business.

## custom made

Because of the nature of office automation, your Private Wire System must be tailored to suit your own individual aims. Factors to consider are number of branches and plants, amount of two-way administrative traffic, sales volume and peak sales periods, production, distribution and inventory controls. For this reason we suggest that you call in Western Union communications specialists in the very first planning stages of your program. Our wide experience in custom-designing office automation systems is available to help you devise the most efficient and economical office automation program for your business.

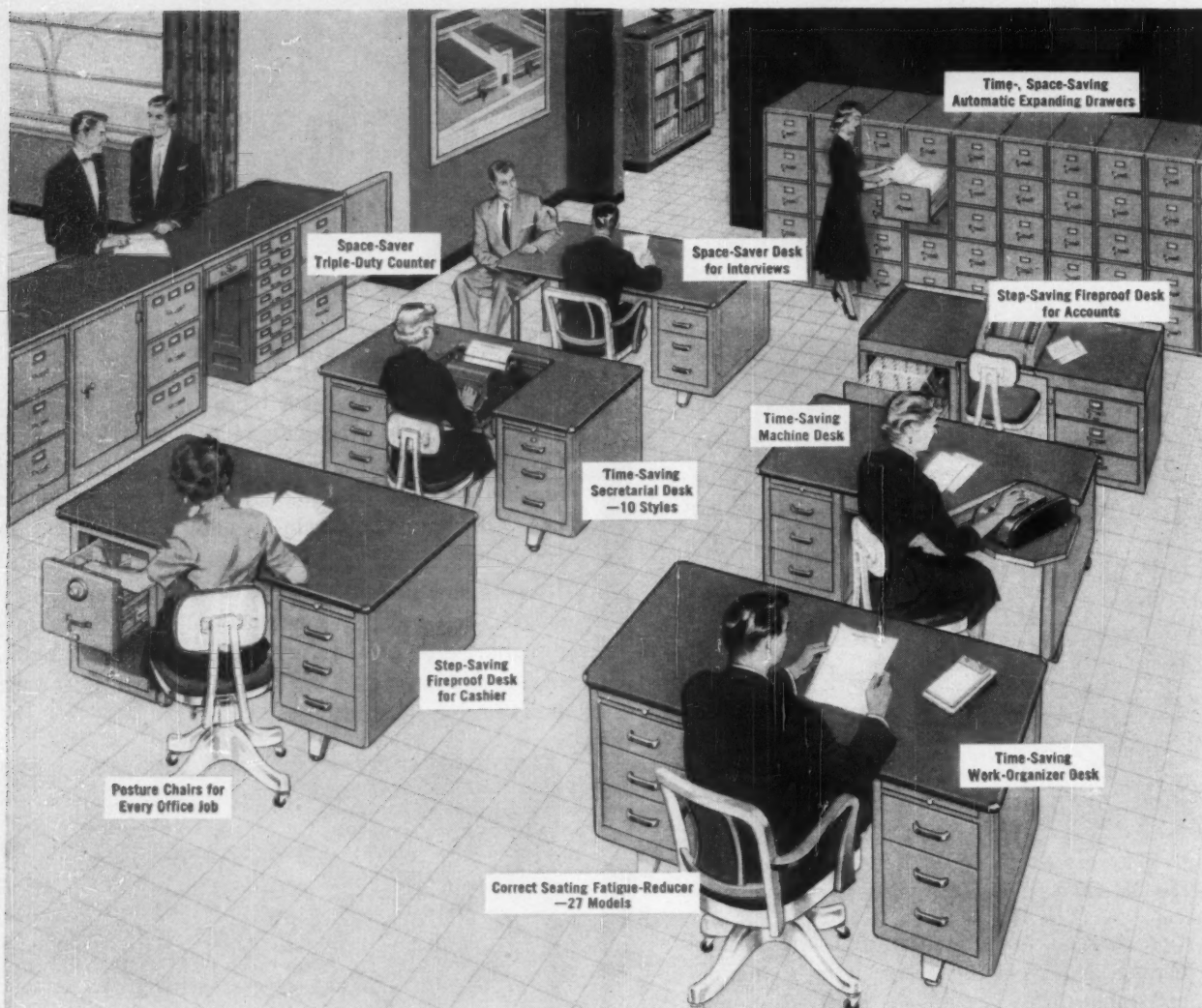


**CUSTOM BUILT  
COMMUNICATIONS SYSTEMS,  
ENGINEERED  
TO YOUR SPECIFICATIONS**

<small>Class of Service</small> <small>This is a fast message service to deliver messages to the nearest office.</small>	<b>WESTERN UNION</b> <b>TELEGRAM</b>	<small>SYMBOLS</small> <small>WU=Western Union</small> <small>WU=Western Union</small> <small>WU=Western Union</small>
<small>The following times shown in this form are approximate and subject to change without notice. Time of service is not guaranteed.</small>		
<b>PRIVATE WIRE SERVICES DIVISION, DEPT. DA-10</b> <b>WESTERN UNION TELEGRAPH CO.</b> <b>60 HUDSON ST., NEW YORK, N. Y.</b>		
<b>PLEASE HAVE A REPRESENTATIVE CALL RE OFFICE AUTOMATION. NO COST OR OBLIGATION, OF COURSE.</b>		
NAME .....		
POSITION .....		
COMPANY .....		
STREET ADDRESS .....		

wire collect for  
further information  
today!





# Automation is at work in this office

AUTOMATION as applied to the saving of time and human energy is at work in a very practical sense in offices using "time-engineered" equipment. Shaw-Walker's "time-engineering" is where automation starts because it transfers to the equipment or system work formerly done by the employees. It makes every job easier. Every worker accomplishes more. That's precisely why Shaw-Walker is a self-liquidating investment, and equally important—a profit tool. Put this automation to work in your office. Start re-equipping with Shaw-Walker.



New 1956 Office Guide. 292 pages of ideas and equipment to ease and shorten office work, everything for the modern office except machines.



## SHAW-WALKER

Shaw-Walker Work-Organizer Desk is the closest approach to office automation yet created

Modern as tomorrow.  
Wide choice of colors.

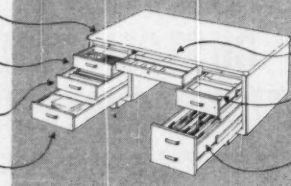
New low height (29") speeds  
reading, writing, reaching.

Built-in organizer rack for  
papers, forms, pads.

Records drawer organizes  
card lists for speed.

Waste basket in drawer  
saves time, floor space.

WORK-ORGANIZER DESKS  
— 86 MODELS



Most comfortable working  
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Specific compartments for  
all working tools—from  
paper clips to binders.

Four "in-drawer" letter  
baskets organize papers.

Two cross files. Automatic  
tilting folder supports, speed  
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usable pulls clear of desk.

Largest Exclusive Makers of Office Furniture and Filing Equipment in the World.  
Executive offices at Muskegon 38, Michigan. Branches and exclusive dealers  
in 416 cities. Consult your phone book.

## *Good planning integrates order processing for better customer service*

*Here's how Scott Paper eases strain on production planning, gets faster deliveries, produces accurate daily sales analyses for top management.*

CUSTOMER orders, especially rush orders, which came into Scott Paper Company's headquarters at Chester, Pa., had to be processed faster to meet post-war competitive requirements and a bigger volume of business.

On a routine basis, the order flow chart was not keeping up with rush demands and the daily loading potential of the various plants. Rush orders were typed or sent to plants over a TWX machine in layman's language without coding. Some were sent over the phone. Every "exception" order received special treatment, which meant the manual creation of new, basically similar documents at each step—before it could be tabulated. A way had to be found to combine the cost advantages of tabulating with the speed and flexibility needed to handle sales orders under new economic conditions.

In the highly competitive paper business the accent is on customer service. The decision to integrate the sales phase of data processing, therefore, was motivated by the alluring possibilities of cutting down the time gap between order and confirmation and shipping. Cost-savings were also of importance. The fact of prime significance for management readers is that with a modest investment, under \$10,000 in new equipment, the time required to process an order was cut to less than 15 minutes on rush orders! This means that a sales manager can pick up the telephone to call in a hurry-up order and in about twelve minutes all of the paperwork in Chester, Pa., can be cleared and the shipping order and bills of lading will be automatically typed in any of the eight plants throughout the U.S.

The manner in which Scott Paper is working toward office automation is fairly typical of the

approach of industry toward this new management tool. It's being tried out and justified on one system at a time. And again similar to other companies, Scott is putting it to work on sales order processing. What makes this a key portent of future advances in office automation is that in order processing routines, many departments are involved. Therefore, we have in miniature a picture of how a completely integrated data processing program involving the bulk of paperwork processing might eventually look. It suggests, too, the organizational changes that will evolve as automation and integration move into the office. In this instance, where only one system was integrated, a new department was created in which traffic, customer service, order preparation and order control are centralized, all reporting to one manager.

Planning for the improvement began in March, 1952. By June, after sifting through recommendations of consultants McKinsey & Company, management knew how it might be done. Six months later the mechanics were completed and the system went into operation. Allowing six months for "debugging" the new system, from the time serious planning began until satisfactory operations were achieved, fifteen months elapsed.

### *How the integrated system works*

At eight o'clock in the morning the finished stock control supervisor gets a full report from the tabulating department which gives him the whole story on availabilities—merchandise released the previous day by plant, brand and warehouse. By nine o'clock he has received from the TWX wires a rundown on finished stock produced the previous day. He's ready to go.

On the basis of this data an incoming order (most orders are mailed in) is processed instantly. The requested shipping data is OK'd or a new shipping date is assigned. The mill or warehouse appointed to ship the order is designated and the original order moves on to order process supervisor. Meanwhile the confirmation copy of the sales order pauses briefly in the tabulating department on its way back to the salesman. Here data is taken off for a flash booking report to sales management. The confirmation copy is then mailed to the salesman.

The order process supervisor now schedules the sequence of handling—usually by order batching. Shipping weights are extended and totalled; orders are sorted by division and type of release (a "sure" date or week of date, for example) and exceptions—a credit situation, for instance—are shopped for checking.

### *Into high gear*

Except for the flash report to sales management, the routine to this point has been more or less traditional, although the immediate confirmation of the order is unusual. No new pieces of paper have been created yet.

Now, a five-channel customer master tape is pulled from the file and placed with the order. The tape contains all the non-variable customer information which will reappear on record after record from this point on. The customer master tape and original order go to a Flexowriter machine. The master tape goes through the machine which types this data automatically at the rate of about 100 words per minute. The clerk

*Text continues on page 72  
Flow chart on next page*



# HERE'S HOW INTEGRATION

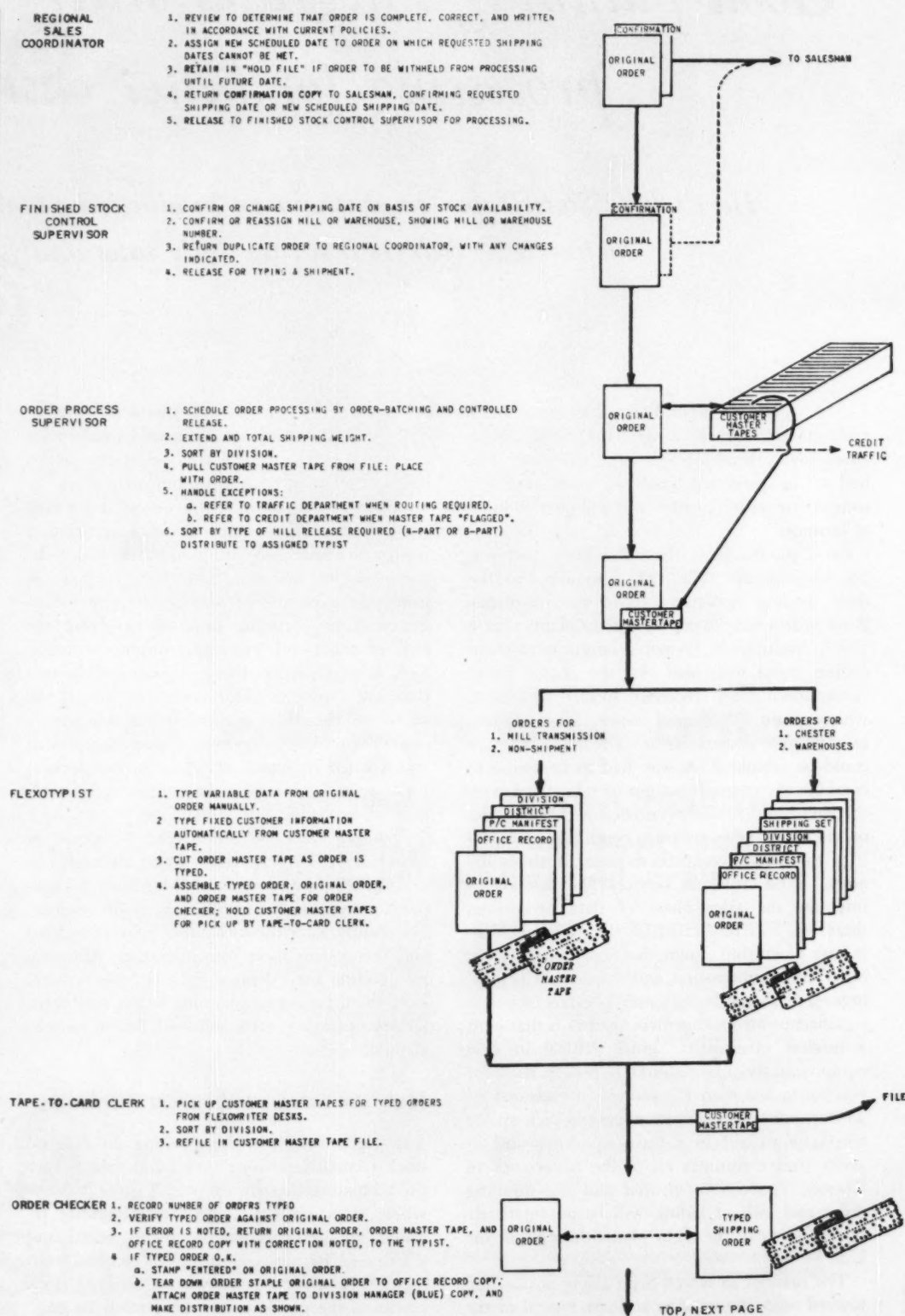
*A combination of tape-operated equipment plus punched-card machines plus leased wire service plus planning does the trick.*

Before confirmation shoots back to salesman, it goes into tabulating for a fast daily flash report to management . . .

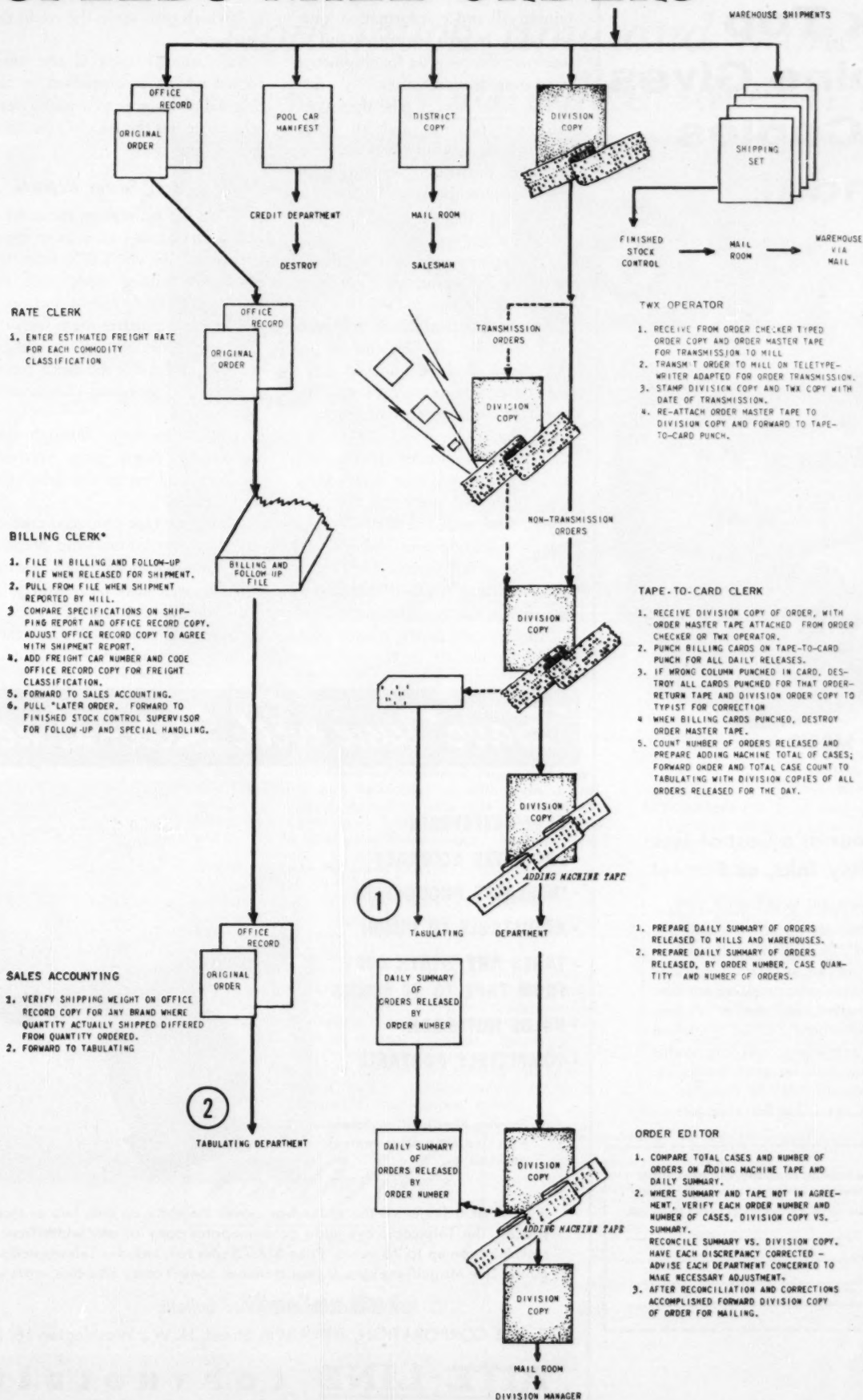
Only exceptions are stopped here. Most move quickly to tape operation—next step . . .

Customer tape with unvarying data combined here with new order data onto another tape.

Unvarying data customer tape back to files until next order. Tape for this order checked for accuracy. . . .



# SPEEDS MILL ORDERS



Five-channel order tape transmitted to mill automatically over leased wire system. . . .

Order tape fed into tape-to-card punch. Punch cards go to Tabulating where:

① Billing cards are made up and unit price is multiplied by the number of cases.

Cards then filed until the order is shipped.

② When notification of shipment is received, cards are used to prepare customer invoices, daily sales records, freight and accounts receivable registers—plus records of sales by customer, brand, district. Tabulating pours out a daily record of shipments by brand, cases, dollar value, freight costs, and a cumulative total for the month.



# New Desk Top Copying Machine Gives You Direct Copies in Seconds!



New Copyflex Model 100  
Requires only an electrical connection to operate.

**Makes up to 300 Copies Per Hour at a Cost of less than 1¢ Each! No Stencils, Messy Inks, or Fumes!**

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adds to the tape variable data from the original sales order. Product of this is an order master tape containing all order information plus all office records required and a four-part shipping set for shipments from outside warehouses.

The order master tape then goes into teletypewriter and all order data is automatically transmitted to the plant where a receiving machine creates the basic documents they need, including a four-part bill of lading.

Having been used to transmit the order to the plant, the tape now moves into a tape-to-card machine to create punched cards for each order released. At the end of the day decks of these punched cards are fed into tabulating to establish the basis for a number of management reports.

When the customer order master tape was created, four copies were simultaneously made by the machine. One was the division copy which accompanies the tape throughout the routine for control purposes, after which it is mailed to the division sales manager.

Another copy is the district copy which is mailed to the salesman

about the time the order is being transmitted to the plant. Another copy becomes the credit verification tool which ends up in the credit department.

Still another copy is the office record which, accompanied by the original order goes to a traffic clerk who estimates the freight rate, then to a billing clerk.

## Now: Better, Faster Reports

When the plant ships the order—this information comes in to headquarters daily via TWX from the plant—the billing clerk pulls the two copies (office record and original order), compares them with the shipping report, adds the freight car number and codes the office record copy for freight report classification purposes.

These then move through sales accounting where some verifying is done, and on to the tabulating department.

Using the tape-produced customer billing card, tabulating prepares daily summaries of orders released—orders that have been sent to the plants or warehouses.

When the order is shipped, these billing cards are pulled and addi-

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Showing Rite-Line Copyholder with Line Magnifier (extra) attached.



A touch of a finger on the space bar moves the copy up one, two or three spaces. The Telescopic Eyeguide accommodates copy of any width from a machine tape up to 20 inches. Price \$17.75 plus tax, includes Telescopic Eyeguide. Line Magnifier extra. If your stationer doesn't carry Rite-Line, write us.

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**RITE-LINE COPYHOLDER**

# How much time and money could your office save, this way?



This battery of three Revo-Files at the Los Angeles Teachers Credit Union revolutionized filing operations . . . cut costs . . . improved efficiency.

A simple change from old-fashioned "hunt and pick" card files to modern Revo-Files usually saves a firm enough to pay for its Revo-Files in a year or less. In addition, morale goes up . . . clerical fatigue goes down . . . and the efficiency of your whole card system improves!

WHAT COULD BE more practical? Let those file cards "go round in circles" instead of your clerks! Save all the lost time, motion and energy that old-fashioned drawer and tub files steal from you. Save on your operating costs, too.

Revo-File "rounds up" all your active cards . . . as many as 7,500 cards per file . . . brings them under fingertip control . . . ready instantly for reference and posting. Clerks use the Revo-File from a relaxed sitting position (or convenient standing position, with special Hi-Boy Model). Revo-File is compact. Mobile. Takes only a fraction of the space needed for the same records in older-type files. Why not investigate this modern cost-cutting equipment, today? If you have 3,000 or more active cards, it'll pay you handsomely. Mail coupon, now!

**IMPORTANT P.S.** Nice thing about Revo-File is that no costly, time-taking changeover to new cards is required. Put present cards in . . . you're ready for work.

## Why Revo-File is the world's finest rotary file.

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- Increases production. Reduces overhead.
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- Makes "in-out" filing faster.
- Reduces clerical fatigue. Improves morale.
- Mobile—move it where needed.
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## Mail coupon, today, for free illustrated folder!

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The Mosler Safe Company, 320 Fifth Avenue, New York 1, N. Y.  
Please send me your free illustrated folder giving full details on Revo-File, world's finest rotary card file.

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FIRM \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_



## Be Our Guest

We're confident that Columbia Carbon Paper Ribbons will produce the best looking executive letters you've ever seen—defined, impressive, sparkling—on any machine designed for carbon paper ribbons\*.

Because Columbia's exclusive carbon formulation permits easy transfer of a full-strength impression to form a sharp, clean, non-blurring image!

Because Columbia's rigid control of the carbon coating process prevents uneven, spotty appearance. Capitals can't overpower lower case characters!

And we'll make it easy for you to judge the superiority of Columbia Carbon Paper Ribbon right in your own office.

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### How To Get Your FREE Ribbon

With your present carbon paper ribbon, type this line on your business letterhead: "Saw ad in Oct. *Dun's Review*." Include typewriter make and your name. Mail to Columbia Ribbon and Carbon Mfg. Co., 8510 Herb Hill Road, Glen Cove, N. Y.

\*Note: Carbon ribbons do not fit fabric ribbon-using typewriters.

**Columbia**

RIBBONS • CARBONS • DUPLICATING SUPPLIES

tional shipping data punched. The customer's invoice is prepared and reports for management pour out—a daily report of sales which includes a statement of all shipments, broken down by brand, cases, dollar value, freight costs, and a cumulative total for the current cost period.

Monthly, these decks of cards produce finished stock inventory reports for stock control purposes; sales reports by divisions and territories for sales analysis; traffic reports and a semi-annual report showing all details of shipments to customers.

Scott Paper's former system allowed the lapsed time between receipt of the order at Chester, Pa., and receipt of the various shipping forms at the plant to range from 11 to 75 hours, including mailing time. The maximum time now is four hours, although routine orders destined for shipment begin reaching the plants from one-half to three hours after they reach Chester from the various sales districts.

### Lesson for Management

It is easy to see what this means in terms of competitive advantage for the company. Under its former system—for what were formerly good reasons under a smaller volume of sales—a newly received order went first to *sales correspondence*, then to *credit*, then on to *traffic*, next it returned to *sales correspondence* who passed it on to *tabulating*. *Tabulating*, in turn returned it to *sales correspondence*.

And then, the shipping document was mailed or phoned to the plant shipping departments.

The new, integrated system gets the order to the plant almost immediately. Because the process is triggered by tape operated mechanisms, all preliminary computations can be fed through a small computer without stopping for time-consuming key punching operations in tabulating before the order goes to the plant. As a matter of fact, the whole tabulating operation is by-passed until the end of the day, at which time whole decks of punched cards can be processed. Because any punched card tabulating operation thrives on long-run volume, this is sound economics.

The net for management: More accurate reports faster; faster customer service and fewer clerical errors on orders.

## For Easiest, Most Economical Systematic RECORD STORAGE



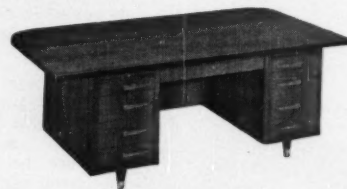
Keep expensive steel file space active by transferring inactive records to Liberty Storage Boxes. Liberty Boxes are best because—

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Send today for FREE Catalog picturing and describing economical record storage products for every business.

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## strictly on the QUALITY SIDE



• WE ADMIT WE'RE PAINSTAKING about even the smallest details of every desk that wears the "ID" trade-mark. For exactly 50 years, this Indiana Desk symbol has been accepted by American businessmen as a guarantee of excellence. Careful selection of woods and skilled woodcrafting have kept Indiana Desks the standard of value. We intend to keep it that way... always.



Don't settle for less than proved-quality desks — the kind you'll find at your nearest Indiana Desk Co., Inc. dealer's. Write right now for his name.

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JASPER, INDIANA • U.S.A.  
OUR 50TH YEAR OF SERVING AMERICAN BUSINESS

"Why did it cost \$2<sup>76</sup> to put on a dime's worth of paint?"



Talk fast, mister! Don't worry, the foreman will—with plenty of explanations. But afterward he'll take steps to cut painting costs back to where they should be. And keep 'em there.

Who's the hero of this drama? Keysort punched-card accounting. The boss learned through Keysort operation costing that things were getting out of hand in the Finishing Department. On certain operations the figures were far higher than last week's. Knowing the score—and knowing it on time—the boss could move quickly

to bring his cost picture back into focus.

Moral: a McBee Keysort installation can give you comprehensive, accurate reports on every phase of factory operation, and give them to you fast. On your desk by the 4th of each month. Important interim figures weekly, or even daily. Whether yours is a 100-man payroll or a colossus supplying the whole country. The cost? Surprisingly low.

There's a trained McBee representative near you. He'll be glad to show you how it's done. Or write us.

## McBEE KEYSORT.

Punched-card accounting for any business

Manufactured exclusively by The McBee Company, Athens, Ohio • Division of Royal McBee Corporation  
Offices in principal cities • In Canada: The McBee Company, Ltd., 179 Baitley Drive, Toronto 16, Ontario

What's this? Blackjack... at \$1<sup>71</sup> an hour?



Should these men be fired? Absolutely not. They reported on time. But the work hadn't reached their department yet.

Next week the same department may need a second shift. And once again management may not know till too late.

Costly production mixups like this can be effectively forestalled with Keysort punched-card accounting. In this case, a weekly Keysort work-load summary would have shown which departments had a light work-week ahead...and which ones were due to be overloaded. Thus

necessary transfers, layoffs, extra shifts could have been ordered on time.

A McBee Keysort installation can give you comprehensive, accurate reports on every phase of factory operation, and give them to you fast. Complete figures reach your desk by the 4th of the month. Important interim figures come to you each Monday, or even daily. Whether you run a 100-man branch plant or a manufacturing giant. And at very low cost.

The trained McBee man near you can show you how it's done. Or write us.

## McBEE KEYSORT.

Punched-card accounting for any business

Manufactured exclusively by The McBee Company, Athens, Ohio • Division of Royal McBee Corporation  
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You are looking at 14 gold-plated garbage cans



Special orders for the Texas-oilman trade? Guess again.

Fact is, each is priced below competition. The factory's turning out several thousand this month, for a new customer.

Unfortunately, the gold-plating doesn't show up on the product. Or anywhere else. It's concealed in a cloud of figures covering a month's operations for the whole factory. Weeks from today, somebody'll discover that the company lost money on the order... maybe even how much money. But the damage is done now.

This story could have had a happy ending—with Keysort punched-card accounting. Keysort job-costing cards could have

computed a correct, profit-included selling price. The same cards would have shown the plant manager how costs were running at each step in manufacture. He'd have spotted any impending loss on time... used his know-how to eke out a profit.

A McBee Keysort installation can give you comprehensive, accurate reports on every phase of factory operation, and give them to you fast. On your desk monthly, weekly, daily—as your needs require. Whether you run an industrial giant or a 100-man branch plant. At very low cost.

The McBee man near you can show you how it's done. It will take him one hour, from start to finish. Phone him or write us.

## McBEE KEYSORT.

Punched-card accounting for any business

Manufactured exclusively by The McBee Company, Athens, Ohio • Division of Royal McBee Corporation  
Offices in principal cities • In Canada: The McBee Company, Ltd., 179 Baitley Drive, Toronto 16, Ontario

## McBee gives you **more** than the mechanics

Terms like "automation in the office" and "integrated data processing" sound pretty impressive. They almost make fact-collecting sound like a worthy goal in itself.

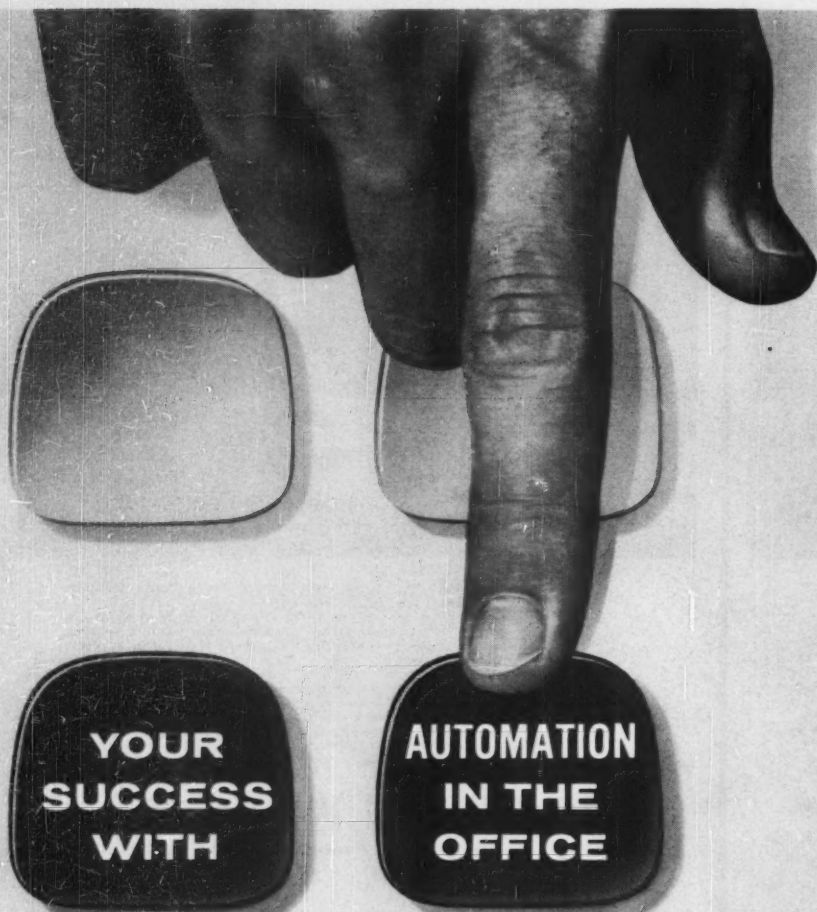
But we of McBee believe that facts are important only when they *serve* management. In other words, they have to be *meaningful* facts. And they have to reach management *fast*.

To that end, McBee machines and procedures are designed to be exceptionally *flexible*. You don't have to change your ways of doing business to conform with them. They can be shaped to fit *your* needs.

For these reasons—in labor costing, job costing, payroll, sales analysis and many other accounting functions—the *quick reports* provided by McBee Keysort are of far more actual *use* to management than the results turned out by systems which cost much more.

The ads reproduced here point out some ways in which Keysort can serve the management of *your* company. The trained McBee man near you has a presentation which will show you how it's done. *It takes just one hour, from start to finish.* Phone him or write us.





## depends on how it's planned

Automation is more than just machines, however complex. It is more than electronics. Successful automation calls for a balanced organization of methods, machines, and manpower designed to fit the pattern and needs of your business. And the benefits you may derive from automation depend primarily on how well it is planned.

For half a century, Ebasco has mechanized office work, streamlined methods and reduced costs for clients in all types of business and industry. In Ebasco, knowledge of the most modern techniques and machine equipment is blended with years of experience in all the management areas affected. Some Ebasco automation projects have entailed the most elaborate electronic devices. Others have involved the addition of no new machines. All have been based on objective analysis of each client's problems and needs. And on every job—large or small—the same experienced Ebasco teamwork is applied.

Management's decision today is no longer to automatize or not to. Automation has become basic to meeting competition in every field. The successful competitors are those who plan their automation with the soundest, most experienced help.

For additional information on Ebasco's services in this field and how they can be applied to your business, write: Ebasco Services Incorporated, Department AH, Two Rector Street, New York 6, N. Y.

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*E. C. Mausz of Republic Steel Corp. tells the conference, "before we ordered the computer, we made a complete systems and procedures analysis. We knew we could justify it on the basis of costs and increased efficiency."*

## 27 companies evaluate the impact of new data processing techniques

*Summed up: Even small companies should begin studying it. The idea is red hot, but working it out takes more planning than management thinks*

**W**HAT INDUSTRY thinks of the current status of office automation will largely determine its acceptance in the immediate future. To balance their own appraisal of automation's potentialities, the editors invited 27 companies to send their experts to New York for two five-hour meetings. Because many of their comments are critical, all quotations are unattributed with the exception of those used to caption photographs. Names of all participants appear at the end of the article.

Here, in their own words, is automation as they see it now.

### *The nature of the beast— equipment or concept?*

... The concept is this, basically, that at the first place where any transaction hits the organization it should be recorded in a mechanical form and should be processed from that time on exclusively mechanically. Whether it's on an electronic data processing machine or a conventional machine makes little difference. You can use punched-card equipment with a conversion device, for instance, which will convert your tape to

cards and then process those cards on conventional equipment. And you can use tape to transmit data to another plant or from a regional office to a plant. But the main thing is that you eliminate the manual typing and transcribing except for the original entry.

... Of course, right now that is impossible, but we are already cutting out the vast bulk of it in order processing systems for example. The problem is that phrases like "integrated data processing" which describe the idea have gotten associated with the hardware rather than the concept. Management thinks that if you buy a medium-size electronic calculator and a tape actuator and a Flexowriter, you have achieved automation or integrated data processing. Well, you haven't.

... The word "integrated" is a matter of degree, although the difference in degree may get to be so great that it looks like a difference in kind. Each small company has a typewriter, calculator, bookkeeping machine, and perhaps an addressograph set-up. By providing a common language you can hook up these three machines so that the original data gets typed up manually and then the tape automatically feeds into the

other machines in sequence. The manual processing all along the line is eliminated and even a small company can afford it. However, this is just one step further from the bookkeeping machine which has always performed a number of automatic, integrated operations. Basically, the new concept just ties machines together.

### *What about management's attitude?*

... I think they have heard about it and they're intrigued by it because they've got a problem in office expense. But they are at sea; they don't know what it is all about. They just read the ads and there's some group of magic words with a lot of publicity behind it and they think that here is the answer to all of their problems without any work. But they don't understand their own problem.

... Management is interested for the same reason that brought the automatic revolution in factories some thirty or forty years ago—rising labor costs. The group we're dealing with would not care to be classified as labor but the principle is there. The cost factor, I think, is what is needling top management most. Of course, there



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What makes M & V different from most carbon papers? It's simple—better inks, better paper. So you get clean, sharp, smudge-free copies that read as easily as the original . . . copies with every letter in every word evenly inked and crisp—"a's" and "e's" won't fill even on the last copy.

M & V Carbon Papers are made to last and last—to give you clean, readable copies far longer. What's more, M & V offers you a wide selection of matched inked ribbons for every typing job—to give you sharper originals, too.

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and Inked Ribbons

Mittag & Volger, Inc., Park Ridge, N.J.

is a little gas thrown on the fire by certain manufacturers of equipment and also a certain amount of misinformation as to the ease with which the office revolution can be accomplished. For instance, one of my clients says, "Well, I can move a finishing plant from the North to the South and get it operating in six months; why in hell can't you get one of these systems operating in that length of time?"

. . . Right! Even in the top management of companies who have already ordered and installed expensive, highspeed computing equipment, there is a tremendous amount of naivete. I spent some time with an executive of a large company a few weeks ago. He's spent five years studying and planning this thing and installing it, and it's cost them a half a million dollars to get to the point where they're ready to operate it. That's just preparatory costs. He said he had no idea the thing was going to be anywhere near so time-consuming and expensive in the initiation stage.

. . . When I first talked to the Executive Committee, I found that most of them expected a lot more than is possible at the present time. They'd read newspaper and magazine articles that led them to believe that they could do business with no clerical help at all. But I did find that the uppermost tier of brass accepted readily the common language aspect of data processing.

### How common is the language?

. . . There is as much misconception about that as there is about a phrase like "integrated data processing." There is no common language. If you wanted to reduce it to the language used most often by equipment now, it would be the punched card.

. . . If we reduce it to an objective rather than a current actuality, a common language would be a symbol system that would actuate all pieces of equipment including communications equipment. But we don't have it now. We have five-channel tapes, and six-, seven-, eight-, and on-up-channel tapes; we have magnetic tapes and punched cards.

. . . In other words, at the moment we have native language machines more than common language machines?

. . . Correct! You can move from machine to machine, but then you have to buy or lease a converter. You add an unnecessary step and spend more money. If you are operating with a seven- or eight-channel system computer, for instance, you have to put in a tape-to-card unit in order to do your tabulating and another unit to transmit data over Bell System wires, which only operate on five-channel tape.

. . . This is a technical problem that is on the way to being licked. The major problem is that these data processing systems have come to denote a kind of status. To be



**Holbrook of Bell Laboratories:**  
*"As time goes on, many types of data processing equipment will become available to small business and permit savings where electronic speed is not needed."*

among the elite you must have one. But the rabid desire is running ahead of understanding. We talked to the chairman of the board of a very large company recently, and he had ordered a piece of equipment merely because his competitor had put his name in for one. This particular company is at least five years from being ready even to think about a general purpose computer. They should begin by integrating on a small scale and build up gradually to a computer if one is necessary.

. . . In this area, management doesn't think the process through. They don't realize the organizational changes that are going to have to be made—the departments that may be obliterated; the middle supervisory personnel who are going to have to be taken care of in one way or another; the outlying offices that may have to be absorbed into a central location; and the effect of laying off as many as 200



**Deutsch of Socony-Vacuum Laboratories:**  
*"The computer served as an abstract mathematical model for a refinery. We put in all the conditions and got answers in minutes instead of weeks."*

people, which is quite possible with electronic equipment. You just can't give people, that many, a pink slip and say thanks. You've got the transitional problem. . . As a matter of fact, if you told my chairman of the board that a system would mean he could lay off 200 people, he might very well cancel the order, unless we could show that we could absorb that help through normal personnel attrition.



**Otterstrom of Montgomery Ward:**  
*"It took two men six months to estimate the possible savings and ten more months to develop the details. We'll save \$70,000 annually after the first year."*

### Hyperthyroid backlog

. . . In one sense we're suffering from a kind of forced selling. I'm talking about computers, not integrated data processing as such. If you don't order one and get on the waiting list, you are obviously going to be five years behind; and that's part of the selling technique. If you want to cancel when the equipment is delivered, why you're perfectly at liberty to do so . . . but there may still be a long list.



## Doubling Univac's Speed!

The famous Univac of Remington Rand has widened still further its lead over other electronic business computing systems. Univac is still the *only* completely self-checked system . . . the only one which can read, write, and compute simultaneously without extra equipment. And now, the Univac II adds to these superior features the speed of a magnetic-core memory.

The Remington Rand magnetic-core mem-

ory is more than a laboratory promise. It has been in actual customer use for over a year, passing all tests with flying colors in the first commercially available electronic computer to use core storage successfully.

The *size* of the internal memory of Univac has also been doubled, giving instantaneous access to 24,000 alphabetic or numeric characters. If needed, this capacity can be further increased to 120,000 characters.

Univac's external memory—magnetic tape—now has greater capacity, too, increasing input and output to 20,000 characters per second . . . the equivalent of reading or writing every character on this page more than 1,000 times a minute.

These new Remington Rand developments can be incorporated into any existing Univac installation to double its speed of operation and to increase its economy still further.

ELECTRONIC COMPUTER DEPARTMENT **Remington Rand** ROOM 2002, 315 FOURTH AVENUE, NEW YORK 10, NEW YORK  
DIVISION OF SPERRY RAND CORPORATION





## Now any office can have one!

And if you think every office doesn't want a postage meter, just ask the people in your own!

The little, low-cost DM (desk model) postage meter does away forever with slow, messy lick-and-stick mailing—and with loose stamps and stamped envelopes that have to be locked up and accounted for. Makes "getting out the mail" easier, faster.

The DM prints postage, any amount needed for any kind of mail, directly on the envelope (or on special tape for parcel post). Anyone can use it. Just dial for postage needed, press the lever—and the letter is meter-stamped, with a dated postmark to help speed your letters through the post office faster, and with your own small ad, if you want one. There's even a moistener for sealing envelopes!

With the DM you never run out of the right stamp! Set by your post office for as much postage as you want to buy, it makes those rush trips to the post office unnecessary. At the same time, it protects your postage from damage, loss or misuse—and accounts for postage automatically!

You don't have to send out a lot of mail to justify a DM. Now, any office can have one—and 1 out of 5 users spend only \$5 to \$50 a month for postage. The DM pays its way in convenience alone!

There's a postage meter, hand or electric, for every office, large or small. Ask the nearest Pitney-Bowes office for a demonstration. Or, send the coupon for free illustrated booklet.

**FREE:** Handy desk or wall chart of Postal Rates, with parcel post map and zone finder.

### PITNEY-BOWES Postage Meter

Offices in 94 cities in the U.S. and Canada

PITNEY-BOWES, INC.

1505 Pacific St., Stamford, Conn.

Send free ☐ booklet, ☐ Postal Rate Chart to:

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Frank Knox, left: "When management has a problem now they want a computer right away. They confuse a technique with an objective. They think you press a button and out comes a pie in the sky."

.... I had lunch with the president of a fairly large company—not fairly, *very* large—who is waiting for equipment that will be delivered in about two months. They still aren't ready for it, and they are afraid to go back to the chairman of the board, who is a pretty crusty old codger, and say, "We don't know how to use this thing."

.... Why aren't they ready?

.... Before the war, there were no more than a hundred good systems and procedures men in the country. I'd say the number now would be around a thousand. That's not enough to go around.

.... Let me enlarge on that. There are many systems and procedures specialists who can be given a particular area and line it up competently. But to integrate data processing fully takes a man who can organize and plan a program that will slash right through departmental lines. And there aren't too many people of that stature around. And then, of course, once you get a man like that, you have to give him enough authority to let him step on people's toes.

.... That's the rub. In most companies the procedures department is at a fairly low level.

.... When it comes to directing the over-all planning, where does the office manager fit into integrated data processing?

.... I will say that he would be out of the picture as the head of the team; you should take somebody at the controller's level or the level of administrative vice-president, who has a real interest in it and is actually going to participate and not delegate everything.

### How to operate IDP

.... That's why we're under the executive vice-president; that's what

we sold in the original presentation. I told them that there was no chance to do anything about this if we were to have any departmental line obstacles, because we couldn't operate that way. We're serving the order department, the sales department, accounting, metallurgical, treasury—all phases of the company—and by establishing a committee made up of top men from all the major parts (sales, order and accounting, and production), we can move into any area at will and call on specialized assistance from any department we move into. When I go to the mill level, I talk to the vice-president of operations. We start from the top down. We don't try to go at it any other way.

You see, as we dig deeper into this thing, we might find that entire departments should be eliminated, others combined, and maybe some created. The object is to get the most efficient operation.

.... This could mean drastic revisions in company organizations. For instance, in many cases it is



Lewan of Weston Electrical Instrument Co: "The VP had only a half hour. Then he cancelled a meeting and stayed two and a half hours. Now everybody seems to be thinking about it."



# Success story

Success stories are, invariably, the stories of busy lives . . . and, more often than not, the chapters are written on SUCCESS Calendars. Here is where your remembering is done for you. Your mind is freed for more important matters. You won't forget those vital "things-to-do-today!"

**Equip every desk in your office with a Success Calendar.** Its many time-saving features will be quick to reward you . . . will pay off in increased efficiency. Success Desk Calendars are available at your Stationery or Office Supply store. Order Success Calendars *today*, or write us for complete catalog.

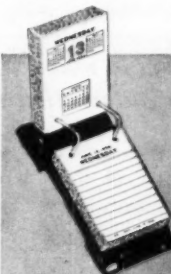
*There's a size and style Success Desk Calendar for every business and professional need. Shown here is the "17." Lefthand page records half-hourly appointments; righthand page allows plenty of room for notes.*



The "85" has magnifying top plate plus other Success features: daily date in red... present, past and future months shown... holidays indicated.



The "19" is engineered to be as neat, handy and efficient as your telephone. It's perfect for home use, too. Your choice of walnut or gray styrene base.



The "13" is an upright style . . . particularly popular where desk space is at a premium. All Success Calendars are lithographed on fine bond paper.

When you  
think of  
SUCCESS  
... think of  
CALENDARS

When you  
think of  
CALENDARS  
... think of  
SUCCESS

## Success

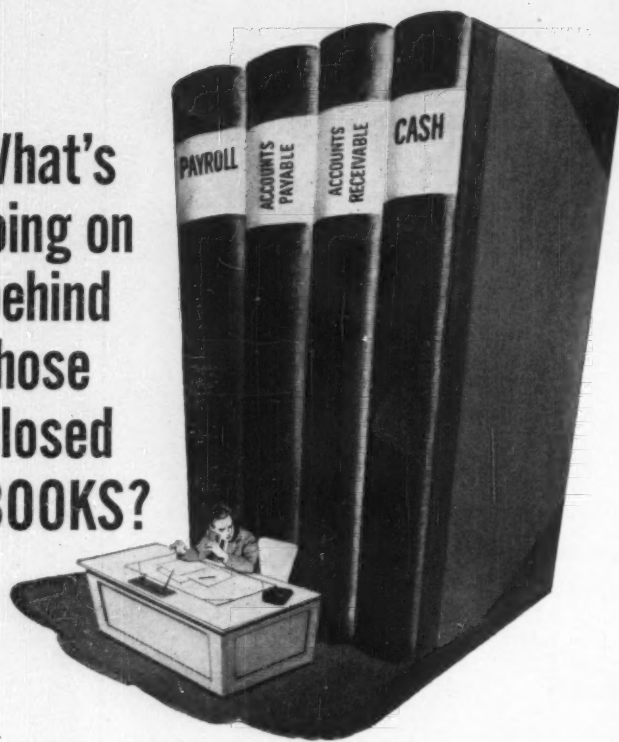
DESK CALENDARS

**COLUMBIAN *Art* WORKS, INC.**

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## What's going on behind those closed BOOKS?



Many executives like yourself are too busy to keep close contact with bookkeeping operations. And yet this department may be eating up a sizable share of company profits. Aside from the danger of embezzlements, hold-ups, forgeries and general dishonesty—there's the wastage caused by lack of control and by inefficiency.

The Todd Company—through its Methods Study Plan—has put hundreds of bookkeeping departments on a safe, sound, economical basis. Won't you give us the opportunity to outline what our ABC Payroll System, our disbursement safeguards and our specially-designed machines can do for your business? Mail the coupon below. It won't cost you a penny to hear our story and it may save your company thousands of dollars.

THE TODD COMPANY, Inc.,  
Dept. DR, Rochester 3, N.Y.  
Gentlemen:

I'm interested in your Methods Study Plan. Will you have your nearest representative phone me for an appointment?

Name of Company \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_

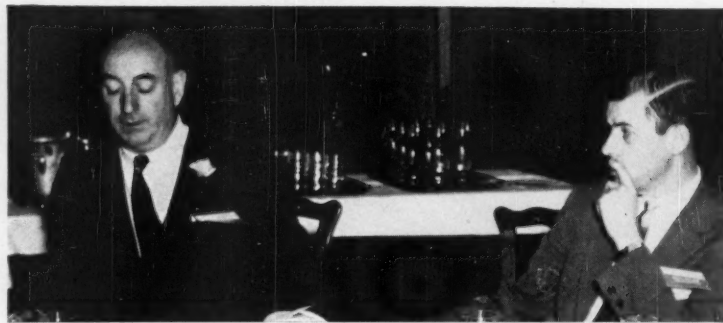
Your Name and Title \_\_\_\_\_

Phone \_\_\_\_\_

DR-10-55

**Todd**  
COMPANY, INC.

ROCHESTER NEW YORK  
SALES OFFICES IN PRINCIPAL CITIES  
DISTRIBUTORS THROUGHOUT THE WORLD



*Robn of Schenley Industries listens to Sullivan of N.Y. Bell: "We found out as we went along that almost all data you touch finish up in accounting. They're important people of the team."*

most efficient for a company to centralize all of its data processing in one location. Now, physically speaking, that company may be completely decentralized, with plants all over the lot. You might have to take the data processing from the plant offices that report to the operating vice-president and install an over-all system in a central location to avoid duplication and take advantage of this highspeed stuff.

The basic problem here is communications, leasing wire facilities and so forth, to get the data to the processing center and then back to the plants. So for speed and economy, you might end up with a processing center at a point where currently you have no plants or offices. Sylvania is doing that in New York State.

... I think you'd be making a mistake to put this new concept of data processing under the Controller or the Treasurer, because it affects every department. Each group is feeding raw data out in the form of reports or records. We're putting the actual hardware, the machinery, under the accounting department; but the planning and the decisions will be on a staff level reporting to the vice-president in charge of organization planning.

### *How to make an automation study*

... You need to form a committee of the top operating vice-presidents or their delegates. Now it may immediately be delegated to the methods and systems department, but you've got to make it clear to the whole organization that the boys at the top want to do this. ... Then you make a standard systems and procedures study, plotting

the flow of paperwork, weeding out unnecessary steps, forms, and records; and you challenge company policy all along the line to make sure you are down to bedrock. When this part of the study is complete, you have already saved the company enough money to justify the cost of the entire project, whether or not you go into integrated data processing with automatic and electronic equipment.

... Then you bring in the companies manufacturing the equipment, now that you know what you would like to do, and have them make surveys with you to determine what their hardware can accomplish. As a matter of fact, we're running three of these surveys right now.

... When you reach the stage that you have got your workloads down on paper, you might find that your volume calls for a medium size or general purpose computer. So you send some people off to one of the computer schools to learn detailed programming.

*Continued on page 87*



*Blasi of United Medical Service: "Before you think of electronics, you should go over your entire procedures program and weed out and simplify. Then you can study full integration."*

## TWO WAYS TO GET FASTER FIGURES

These work-saving, time-saving office machines  
and results

APH "202"

### W, ALL-ELECTRIC DDING MACHINE

er than you think.  
acts, multiplies  
vides. Unusually  
fast at 202 print-  
ute. Visi-Balance  
omatically shows  
it balance. Com-  
rd, scientifically  
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indexed figures.



## How Glens Falls Insurance Company cuts paperwork—speeds operations with P-A-X

BUSINESS TELEPHONE REPORT NO. 108

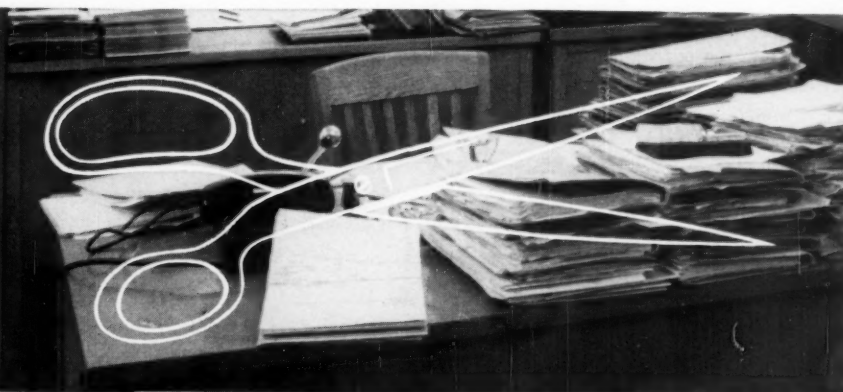
One of a series of studies showing how  
progressive business management uses  
internal telephone service



**P-A-X**

business  
telephone  
systems

AUTOMATIC ELECTRIC



COMPANY

graph "202"  
meter

State

et of Felt & Tarrant Mfg. Co.



What's  
going  
behind  
those  
close  
BOOK

## How GLENS FALLS benefits with its P-A-X Business Telephone System

**Cuts paperwork—saves man-hours**—information is exchanged quickly through instant telephone contact

**Closes administrative control**—every department is linked with every other department through "inside" telephones

**Better customer relations**—the outside switchboard is always open for business and it is never jammed with inside calls

**Reduces unnecessary walking**—P-A-X telephones keep employees at their desks, make them more productive

**Fewer long-distance call-backs**—information is quickly gathered over P-A-X while the calling party waits on the outside telephone

**Improves employee teamwork**—P-A-X helps eliminate confusion caused by incomplete information—permits easy exchange of facts and ideas

**Private 2-way conversations**—confidential matters can be freely discussed over P-A-X telephones at any time

**Long-range economy**—P-A-X is a capital investment that soon pays for itself in greater efficiencies

**Greater flexibility**—telephone locations are easily changed, new telephones are easily installed

## Glens Falls' San Francisco Office

...ss steps, reduces paperwork load,  
...ly owned, inside telephone system

San Francisco Office of the ...rown remarkably since ... floor space, and expand ... headquarters for the ... 8-state territory with a ... mobile; Casualty; Inland

... smooth interchange of ... tial to success. Glens ... munications and has ... rations, faster handling ... ee throughout the mas ... every other for instant ... telephone system.

### background

Office was formed) to ... switchboard for inside ... em. By 1947, however, ... ications slow-downs as ... witchboard with inside ... company executive saw ... successfully in his com ... The system in use was ... called Automatic Elec ... omized" system for his ... also investigated sev ... checked with the public ... " system.

... erent proposals, Glens ... these basic reasons— ... be purchased outright, ... ir investment through ... Familiarity ... P-A-X ... those of the "outside" ... P-A-X Control Unit is ... Each telephone needs ... e cables are required; ... ations are private and

can't be overheard by others. And with P-A-X, there is no annoying "broadcasting" of messages.

P-A-X was regarded as a capital investment that would soon pay for itself in time and manpower savings. This has proved to be true.

### Glens Falls P-A-X System

Late in 1948, a P-A-X with capacity for 50 telephones was installed by Automatic Electric specialists. The compact Control Unit (4¾' high, 4½' wide, 2' deep) was installed in a corner of the main Conference Room. With 30 telephones connected for use, intercommunications jumped to life—inside calls were getting through *instantly* and the city switchboard was relieved of its troublesome "extra" load of handling inside calls. Additional telephones were connected as floor space was added and the number of employees grew. Today, all 50 telephones are busily at work connecting hundreds of inside calls daily.

### How executives and employees use P-A-X

Over 250 employees in the San Francisco Office are dispersed over a total area of 31,000 sq. ft. Employees who formerly "walked" their messages (it was often faster—and less frustrating—than trying to put an inside call through the switchboard) now dial a 2-digit number, reach a fellow worker 100 yards away, exchange information and proceed with their work. In the time it formerly took to walk from the *Claims Department* to the *Filing Department* (290 ft.), a request can be made via P-A-X, the file can be located and delivered by a filing clerk. In this one operation, P-A-X saves 5 minutes of time and over 600 steps! During coffee breaks or lunch periods, employees in the Cafeteria can be reached by any executive via P-A-X. The Accounting Department calls Supply for necessary materials. Tabulating calls Statistics to check a figure. Personnel calls department heads for additional information. Nearly 70% of the enormous flood of calls are "inside" messages ... a volume that would swamp the switchboard operators.

### Maintenance is negligible

Glens Falls employs no maintenance men, and none has been needed for P-A-X; the telephone system has performed smoothly since it was placed in operation. Under a service

#### THE TODD COMPANY Dept. DR, Rochester Gentlemen:

I'm interested in you  
you have your nearest  
an appointment?

Name of Company

Address

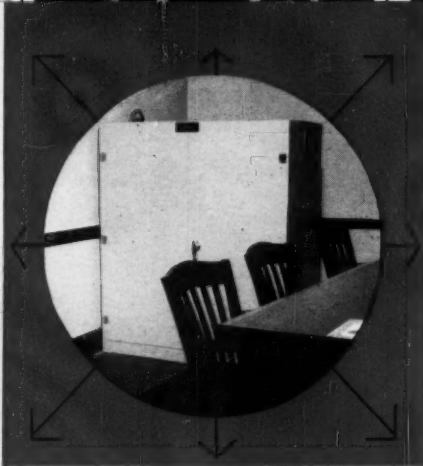
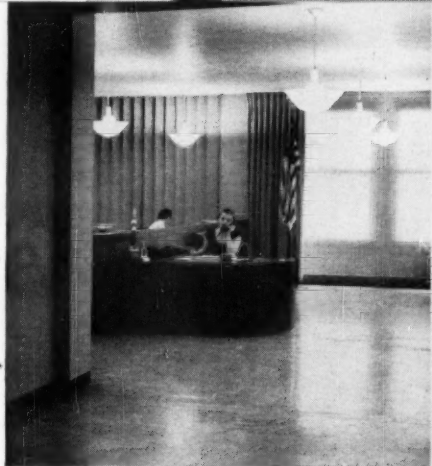
Your Name and Title

Phone



## TWO WAYS TO GET FASTER FIGURES

These work-saving, time-saving office machines and results



From the P-A-X to Over 50 through the

The comp at Glens Unit work

agreement with Automatic Electric, the Control Unit is checked every 3 months for less than \$75 annually. The only other expenditures have been for additional telephones and occasional handsets to replace those broken through mishandling. Typical costs on two recent jobs of this type were \$4.17 and \$4.14. If serious difficulty ever should occur, a call to Automatic Electric would bring a repairman quickly to make adjustments on the spot.

### How the staff feels about P-A-X

Interviewing personnel in various departments, a reporter heard the following remarks:

"We have a minimum of difficulty with employee communications now, and it (P-A-X) saves us time and money." (*James S. Hurry, Vice President*)

"Our biggest problem was used to lose a lot of long-distance calls." (*John H. Bray, Chief*)

"It eliminates a lot of visiting." (*Michael Edwards, Files*)

"Now (with P-A-X) we have better service." (*Mrs. Lillian H. H.*)

"Certainly saves a lot of legwork." (*David Miller, City*)

"It's worked out beautifully. No more walking from office to office to reach the switchboard." (*Mrs. Carol*)

"It cuts my call-backs down to a minimum." (*Agency*)

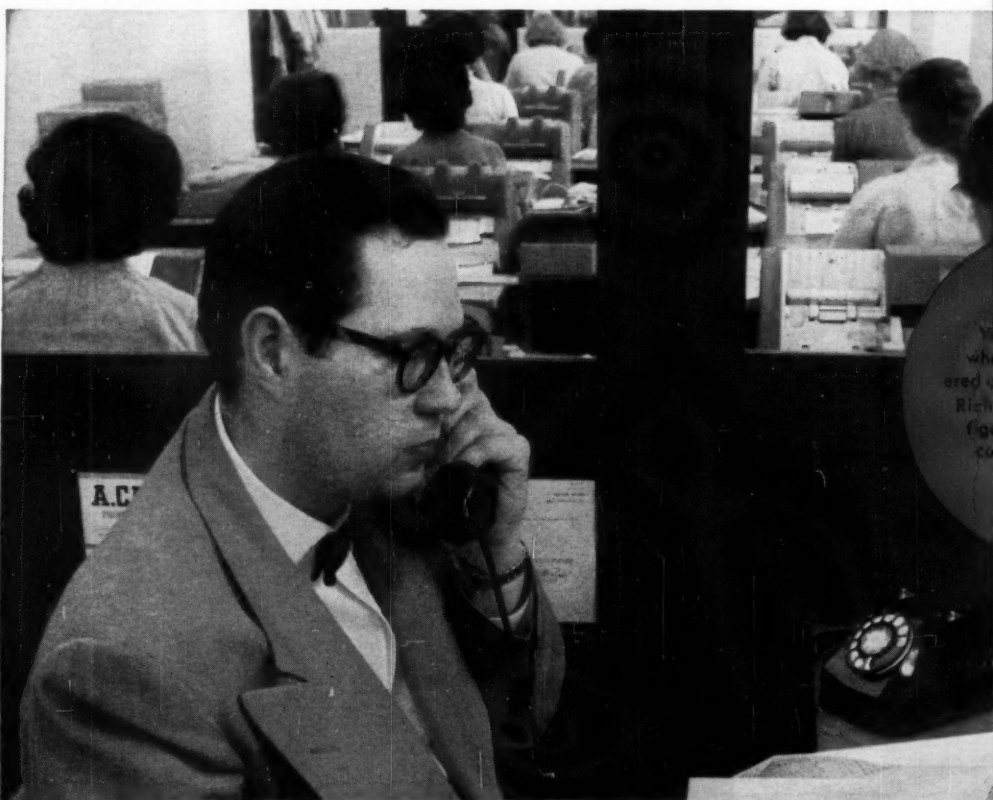


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More than you think. Adds, subtracts, multiplies, divides. Unusually fast at 202 print-out. Visi-Balance automatically shows credit balance. Command, scientifically designed, eliminates lost mopacer wipes out indexed figures.



P-A-X shortens every distance at Glens Falls by placing all employees in 5-second contact. The automatic dial telephone system saves countless steps and hours of productive time.



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coupon  
today**

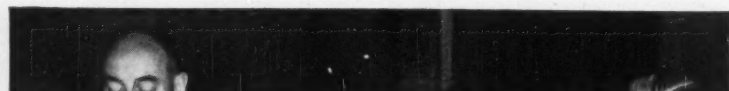
COMPANY

ograph "202" meter

State

Product of Felt & Tarrant Mfg. Co.





## Glens Falls' San Francisco Office saves countless steps, reduces paperwork load, with its privately owned, inside telephone system

Like the sprawling West itself, the San Francisco Office of the Glens Falls Insurance Company has grown remarkably since the end of World War II—doubling its floor space, and expanding its staff 160%! The huge office is headquarters for the Pacific Coast Department that serves an 8-state territory with a multiple line of coverage: Fire; Automobile; Casualty; Inland Marine; Fidelity and Surety Bonds.

Insurance is basically *people*, and the smooth interchange of thoughts between these people is essential to success. Glens Falls knows the value of modern intercommunications and has long used P-A-X for smoother office operations, faster handling of routine forms. Today, every employee throughout the massive Glens Falls office is linked with every other for instant conversation through an "inside" dial telephone system.

### Glens Falls communications background

From 1922 (when the San Francisco Office was formed) to 1948, Glens Falls relied on its outside switchboard for inside calls—the inefficient "single-track" system. By 1947, however, management became aware of communications slow-downs as the growing staff burdened the outside switchboard with inside calls. During an eastern trip in 1948, a company executive saw an inside telephone system working successfully in his company's main office at Glens Falls, N. Y. The system in use was P-A-X. Returning to San Francisco, he called Automatic Electric for a specific proposal on a "customized" system for his West Coast Department. This executive also investigated several other types of inside systems, and checked with the public telephone company on an inside "rental" system.

### Why P-A-X was chosen

After weighing the merits of several different proposals, Glens Falls' management selected P-A-X for these basic reasons—

- (1) *Long-range savings* . . . P-A-X could be purchased outright, offering the possibility of returning their investment through efficiencies in handling paperwork;
- (2) *Familiarity* . . . P-A-X automatic dial telephones are identical to those of the "outside" system;
- (3) *Simple installation* . . . the P-A-X Control Unit is easily installed and takes little space. Each telephone needs only a pair of wires—no bulky multiple cables are required;
- (4) *Privacy* . . . P-A-X telephone conversations are private and

can't be overheard by others. And with P-A-X, there is no annoying "broadcasting" of messages.

P-A-X was regarded as a capital investment that would soon pay for itself in time and manpower savings. This has proved to be true.

### Glens Falls P-A-X System

Late in 1948, a P-A-X with capacity for 50 telephones was installed by Automatic Electric specialists. The compact Control Unit (4 $\frac{3}{4}$ ' high, 4 $\frac{1}{2}$ ' wide, 2' deep) was installed in a corner of the main Conference Room. With 30 telephones connected for use, intercommunications jumped to life—inside calls were getting through *instantly* and the city switchboard was relieved of its troublesome "extra" load of handling inside calls. Additional telephones were connected as floor space was added and the number of employees grew. Today, all 50 telephones are busily at work connecting hundreds of inside calls daily.

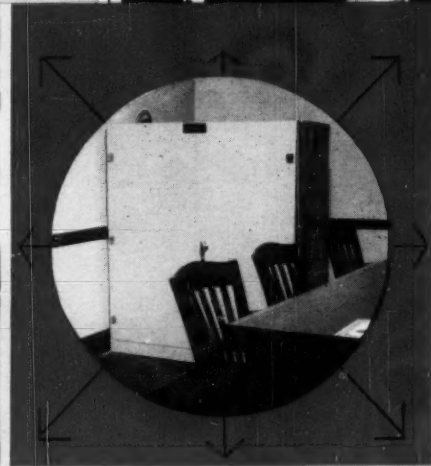
### How executives and employees use P-A-X

Over 250 employees in the San Francisco Office are dispersed over a total area of 31,000 sq. ft. Employees who formerly "walked" their messages (it was often faster—and less frustrating—than trying to put an inside call through the switchboard) now dial a 2-digit number, reach a fellow worker 100 yards away, exchange information and proceed with their work. In the time it formerly took to walk from the *Claims Department* to the *Filing Department* (290 ft.), a request can be made via P-A-X, the file can be located and delivered by a filing clerk. In this one operation, P-A-X saves 5 minutes of time and over 600 steps! During coffee breaks or lunch periods, employees in the Cafeteria can be reached by any executive via P-A-X. The Accounting Department calls Supply for necessary materials. Tabulating calls Statistics to check a figure. Personnel calls department heads for additional information. Nearly 70% of the enormous flood of calls are "inside" messages . . . a volume that would swamp the switchboard operators.

### Maintenance is negligible

Glens Falls employs no maintenance men, and none has been needed for P-A-X; the telephone system has performed smoothly since it was placed in operation. Under a service

## TWO WAYS TO GET FASTER FIGURES



From the Reception Desk, Mrs. Lillian Howard uses P-A-X to call executives and announce visitors. Over 50 key employees are closely interlinked through this "inside" telephone system.

The compact Control Unit in the Conference Room at Glens Falls. Completely automatic, the Control Unit works 'round the clock, requires no operator.

agreement with Automatic Electric, the Control Unit is checked every 3 months for less than \$75 annually. The only other expenditures have been for additional telephones and occasional handsets to replace those broken through mishandling. Typical costs on two recent jobs of this type were \$4.17 and \$4.14. If serious difficulty ever should occur, a call to Automatic Electric would bring a repairman quickly to make adjustments on the spot.

### How the staff feels about P-A-X

Interviewing personnel in various departments, a reporter heard the following remarks:

"We have a minimum of difficulty with employee communications now, and it (P-A-X) saves us time and money." (*James S. Hurry, Vice President*)

"Our biggest problem was the jammed-up switchboard; we used to lose a lot of long-distance calls. P-A-X solved this problem." (*John H. Bray, Claims*)

"It eliminates a lot of visiting and unnecessary conversation." (*Michael Edwards, Files*)

"Now (with P-A-X) we can give outside calls much better service." (*Mrs. Lillian Howard, Switchboard*)

"Certainly saves a lot of leg work; I used to walk all over the office." (*David Miller, City Fire Survey*)

"It's worked out beautifully. Before P-A-X, we did too much walking from office to office and put too much of a load on the switchboard." (*Mrs. Carol Terrill, Sec'y to Mr. Hurry*)

"It cuts my call-backs down considerably." (*Raymond Shuster, Agency*)



Vice President James S. Hurry has found that P-A-X provides closer administrative control of all departments throughout the huge office area.



With P-A-X, secretaries like Mrs. Terry Millh leave their desks less frequently. And it's easier to concentrate. Requests are received in seconds, conversations are short.



Questions arising in conference are quickly answered with the help of P-A-X. Here, John Sargeant calls Statistics for needed data, quickly reaches a decision.



P-A-X telephones are installed wherever needed. In the Glens Falls cafeteria, employees remain closely linked during coffee breaks and lunch periods.



Work flows smoothly when information is gathered quickly. Here, Statistician Richard Paschal relays figures over P-A-X. Time consumed: 20 seconds.



## P-A-X meets requirements of business offices

Communication in business offices is complicated by the many departments involved. P-A-X Business Telephone Systems extend intercommunications throughout these areas—link them closely together with two-way talking convenience. P-A-X also meets the need for precise timing because P-A-X telephones are *fast*—the automatic dial telephone system speeds both routine and critical calls. No wonder so many offices own P-A-X Telephone Systems—among them:

*Arthur Andersen & Co., New York*  
60 TELEPHONES, SINCE 1938  
*A. C. Neilsen Company, Chicago*  
200 TELEPHONES, SINCE 1937  
*Midwest Oil Company, Denver*  
50 TELEPHONES, SINCE 1954  
*John Hancock Life Ins. Co., Boston*  
1500 TELEPHONES, SINCE 1922  
*Ernst & Ernst, Los Angeles*  
25 TELEPHONES, SINCE 1949  
*Eastern Air Lines, Inc., Miami*  
100 TELEPHONES, SINCE 1952  
*Sears, Roebuck & Company, Chicago*  
3300 TELEPHONES, SINCE 1917  
*S. S. Kresge Company, Detroit*  
250 TELEPHONES, SINCE 1930  
*Commerce Trust Company, Kansas City*  
250 TELEPHONES, SINCE 1923  
*Concordia Publishing House, St. Louis*  
75 TELEPHONES, SINCE 1951  
*Kansas City Fire & Marine Ins., Kansas City*  
175 TELEPHONES, SINCE 1936  
*Consumers Research, Inc., New Jersey*  
50 TELEPHONES, SINCE 1938  
*Charles Bruning, New York*  
50 TELEPHONES, SINCE 1937  
*International Paper Company, New York*  
300 TELEPHONES, SINCE 1923  
*Federal Reserve Bank, Cleveland*  
300 TELEPHONES, SINCE 1922  
*Insurance Co. of North America, Philadelphia*  
550 TELEPHONES, SINCE 1925  
*Seattle First National Bank, Seattle*  
50 TELEPHONES, SINCE 1951

Automatic Electric Sales Corporation  
1033 West Van Buren Street  
Chicago 7, Illinois

GENTLEMEN: I am interested in the P-A-X Business Telephone System

- ☐ Please send additional information  
☐ Please have your nearest representative call on me

Name \_\_\_\_\_ Title \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

**Mail  
this  
coupon  
today**

## What is P-A-X and what does it do for you?

P-A-X is a completely automatic business telephone system that you can adapt to your business operations and needs. It meets all your *inside* communication requirements and greatly improves *outside* telephone service. You own your P-A-X, and thereby substantially reduce monthly telephone charges, limiting them to your *outside* calls and outside equipment. Greatest returns on your investment in P-A-X come in the stepped-up efficiency that modern telephone communications can introduce into your business methods.



Desk Monophone



Compact Monophone



Wall Monophone

## Automatic Electric Consultation Service

is available to you to meet the special needs of your company. A letter or telephone call will bring an experienced Automatic Electric communications engineer to your office to give you complete data on how P-A-X can help your business. Or we will send detailed literature upon your request for more information about P-A-X.



# P-A-X

business  
telephone  
systems

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## How to put more Life in your Files...



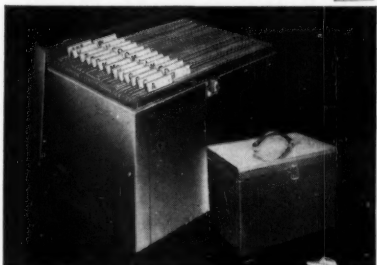
No file is ever a dead file if you use ACCO-bind Folders. They'll keep your correspondence, reports, invoices, all your papers neatly, securely bound between pressboard covers that last for years. And—at transfer file time simply slide out your bound file, insert a new ACCO Fastener and your Accobind Folder is ready to go again. Ask your stationer.



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Oxford Filing Supply Co., Inc.  
36 Clinton Road, Garden City, N. Y.

Name \_\_\_\_\_

Address \_\_\_\_\_

City, State \_\_\_\_\_



*Hines of Western Electric Co.:  
"The time and effort spent on  
studying integrated data proces-  
sing will pay off in operating  
advantages whether or not high-  
speed equipment is required."*

... I believe most of the electronic computing equipment is somewhat similar in operation: you program a thing somewhat in the same way, you have certain commands that you give to the machine, there are certain program tapes that go into it; so that many of the machines are basically alike from an input and output viewpoint. We've outlined about six basic steps that we expect to follow in our programming. I don't know whether it is sound the way we've set it up, or not, but the first step is to pinpoint, function by function, the *current* cost of data processing; second, to eliminate from consideration those functions which do not appear feasible for computer application; third, to determine the total cost for the remaining functions; fourth, to estimate the percentage of this cost that would be eliminated if the functions were performed by a computer; fifth, to lay out the sequence in which these functions would probably be transferred to a computer and to estimate transition time; and last, to develop a cumulative timetable for eventual cost reductions in existing functions.

... Now, to develop a good basis for estimating computer cost savings, we must try to study a sample group of functions, and that would involve selection of five or six functions which would provide the widest variety of data processing problems. We then make an initial estimate by applying these six steps to those samples and for each sample develop a complete problem analysis; and then, if we can, we're going to test run it in one of those computer centers where you rent the computer time.

... In general, there are two basic ways of approaching this thing, two basic philosophies of op-

## TWO WAYS TO GET FASTER FIGURES

These work-saving, time-saving office machines  
simplify work and speed results



## COMPTOGRAPH 202

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☐ Please arrange an office demonstration

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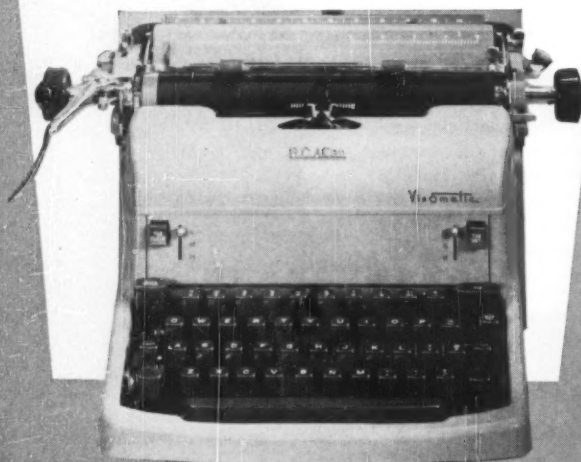


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*Shafer of New York Life: "In addition to studying your procedures, you should explore the policies behind them. It's touchy, but you should challenge as high as you have authority to go."*

eration. You can set out to see what the equipment will do for you. That's one. This means that when you plunge into office automation your objectives are a little vague to the extent that you first want to see what is possible. Then when you see what is possible, you go back and find out how much you can absorb into your own system of operation.

The other method is to study your present operation first, analyze

all the bottlenecks, and formulate your objectives. Then you go to the equipment manufacturers to see how far along the road to meeting those objectives their machines will go. But, in either case, you have to be pretty sure you don't end up putting a Cadillac engine in a Model-T Ford.

## Our Thanks To...

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*Long Island Lighting Company:* Mr. W. F. Rowe: Customer Accounting Manager.

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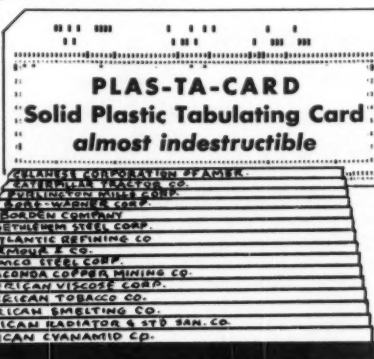
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*Celanese Corporation of America:* Mr. Charles R. Withers: Office Methods Engineer.

Page 93: Producers Comment . . .



*After five hours of brain picking, even an expert in electronic, integrated, and nearly automated data processing begins to wonder about his stamina. . .*



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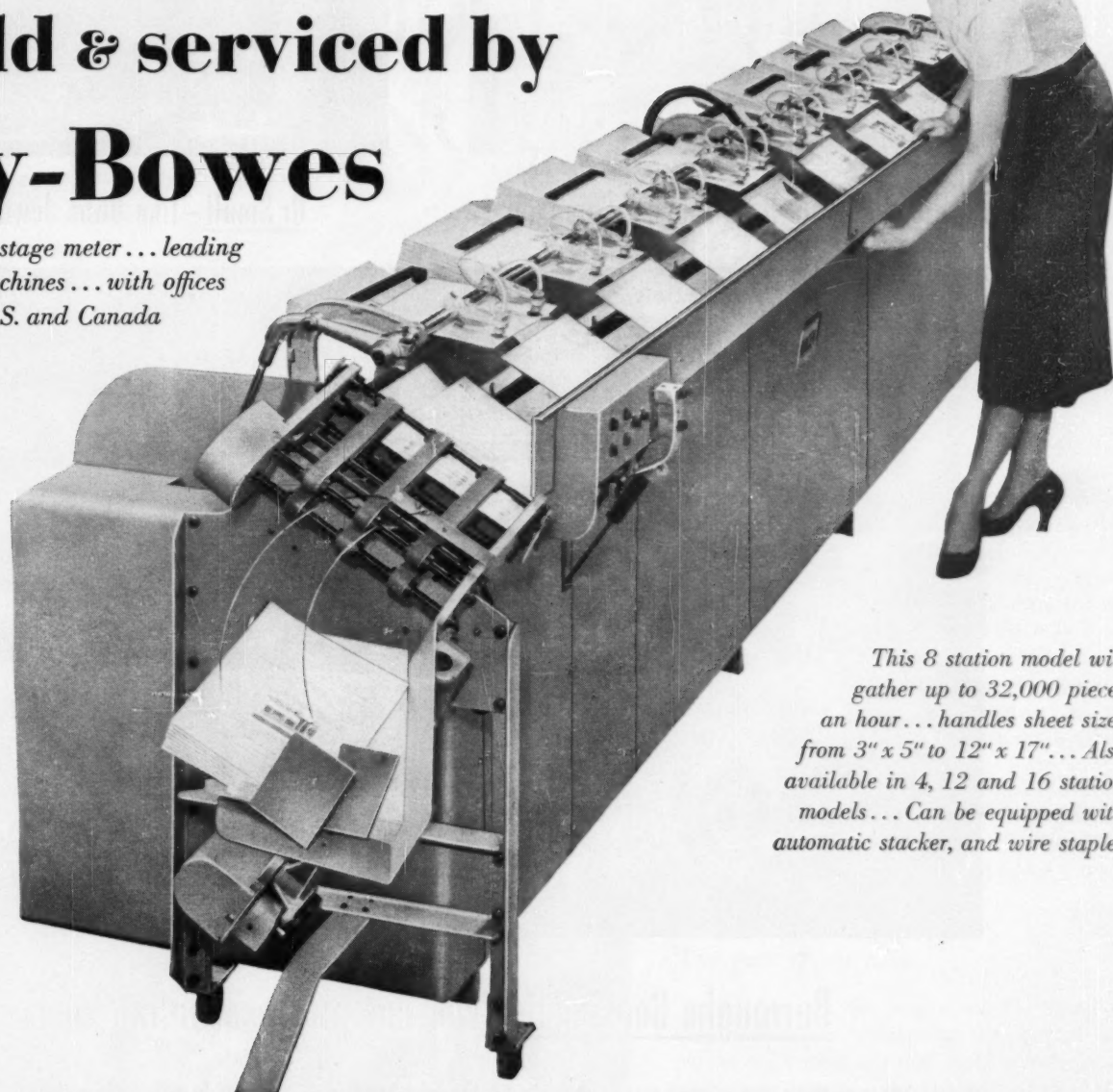
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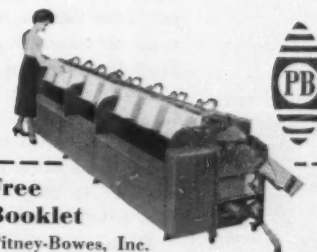
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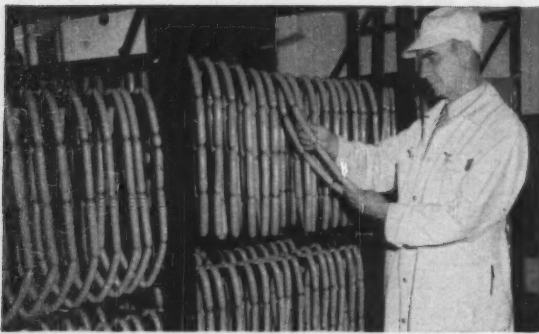


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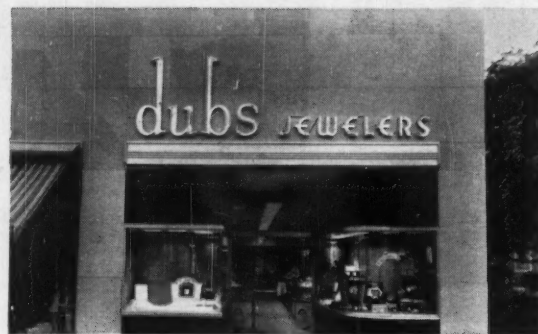
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# HERE'S HOW THE PRODUCERS LOOK AT THE FAST-MOVING DATA PROCESSING DEVELOPMENTS

*Equipment design is still ahead of the user's ability to assimilate  
it most efficiently. But industry is catching up via experience . . .*

HERE, top representatives of twelve key manufacturing companies in the office automation field, ranging from producers of large-scale general purpose electronic calculators to manufacturers and designers of the specialized forms required, discuss the current status and prospects of integrated handling in terms of its significance for top management. Here, in their own words, are the salient points:

## *Genesis of the concept*

. . . I think the general picture of integrated data processing has changed considerably since a year ago last February when Van Gor-

der of U. S. Steel made such a strong statement at the AMA conference at the Astor. At that time, it was presented as pretty much of a mechanical and rather narrow concept. They were talking primarily about common language data and the only distributor of data they recognized was five-channel punched-paper tape.

Since that time a lot of us have become more sophisticated in our thinking to the extent that we know the basic principle is more useful if we don't restrict it to any set pattern. The basic principle is that there is so much repetitive information that has to be handled in any kind of business. You take any simple operation, something that happens hundreds of times a day, and

you'll find that there are just a few scraps of information; maybe a part number, a part name, a quantity, a unit price, and it's amazing how many times those little pieces of information will be used and reused, copied and recopied, checked and rechecked, filed and handled before the transaction gets out of the way completely.

Integrated data processing as an objective recognizes that once you have cut down on that repetitive handling as much as you can by ordinary work simplification studies, there is still a lot of it left which might be handled automatically and integrated so that information flows from machine to machine, office to office, and plant to plant without stopping for a manual copying.

## *The guts of the idea*

. . . There are two basic rules. The first one is to record all information at the point of origin on office machines that make punch paper tapes or cards as an automatic byproduct of the office operation. The second one is to process all information, original and subsequent data, on the same type of office machine and to make all that data self-perpetuating. In other words, where you've got one of these situations where somebody's got to handle certain information forty times in completing a transaction, if the first fellow in the first link of that chain can record that information in a form where everybody else in that whole chain can take advantage of the part that he had, all they have to do themselves is to add new information.

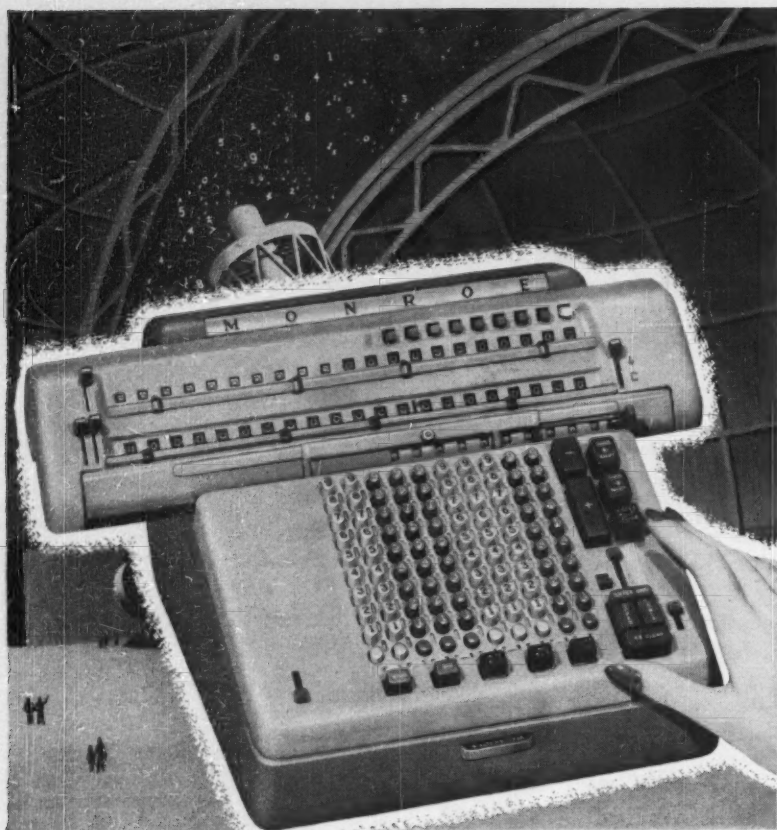
. . . When you analyze it this way, a lot of information originates, for example, in shops and departments where it isn't very practical to have office machines that now make



Ladwig, Manager, Computer Section of Burroughs Corporation (hand over mouth) tells conference: "Getting people to under-

stand what the equipment will do is the problem for every producer. Widespread experience is needed . . ."





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*Executives from IBM, Burroughs, Monroe, and Air Associates tune in as point is made that the term "common language" can hardly apply as yet to the diverse systems for linking machines together.*

tape. For instance, a great many basic facts originate in the form of handwritten documents and, so far as I know, nobody has come up with a lead pencil that will give you a five-channel tape as a by-product. So, we now have a gap at the front end before punched-paper tape may pick up. Then there are a number of documents that can be processed during the flow of paperwork using the tape or else creating the tape along with the basic documents for re-use elsewhere. There are, however, limits at the present time to what you can do with purely automatic machines that are operated by tape. So, at the moment, we are in a transition period where some machines can handle integrated data automatically but where other machines cannot.

... What this really means is that wherever you can, you build data processing equipment into your system, keeping it flexible enough to integrate other equipment as it is developed.

... Right now, for instance, many think in terms of equipment that can be actuated with a five-channel tape. The reason for that is that if you want to transmit data over wires to another plant, you must use five-channel because that is the system used by the Bell System and other wire services like Western Union.

On the other hand, if you've got a data processing problem that does not involve long distance communications, if it involves perhaps only the translation of basic information from typewritten form to punched card form, or typewritten form to magnetized tapes or drums, then in a great many of those cases five-channel tapes would actually be a handicap as compared to six-, seven- or eight-channel tapes. Then

it would not cost you anything to abandon the idea of using communications equipment.

### *Watch that move from five*

... But it is certainly true that if you depart from five-channel on basic equipment now you want to do it with your eyes open. Even if you are not required to use communications equipment to-day, if you go into seven- or eight-channel tape you are closing the door on being able to use it tomorrow. The way companies are following the old urge to merge, there are going to be an awful lot of people who may need wire equipment in a few months.

### *How to measure the tape*

... What type of tape you use depends upon the particular situation. There are many arguments about the best over-all tape channel. Some people even think that eventually punched cards will pass out of the picture. This seems hardly likely. Others think you ought to go to magnetic tape in the first instance.

... Tape has some limitations, verification and recalling information, for example.

... The more channels you have, the more combinations you can get and along with that you get checking features and speed. It just depends on how much you need these additional features. The wire systems would put on a seven-channel line if industry was willing to pay for it.

### *How long to study the system*

... This depends on the current shape of your methods and procedures. Even many medium to large



Al N. Seares of Sperry-Rand, left, gets attention with comment: "I don't see where integrated data processing is going to affect the sales of typewriters, adding, billing, or accounting machines."

companies have miserable systems for collection of data, historical cost comparisons for instance. Then, again, many companies are completely on tab. Each will take a different length of time to make the fullest use of data processing equipment in an integrated sense.

... If you have a large organization, you can justify a computer on one basic operation rather than tying in all operations to make it economical, it's a much simpler type of job. The only way a small- or medium-size company could possibly justify a large-scale computer is to put every single thing in the business on it and this can't possibly work. They would have to merge departments, centralize, and get their data completely turned over for this new type of thing.

... But, nonetheless, if you think you can justify a medium-size computer or if you know you don't need one but you do need to integrate your data processing with a lower capacity calculator, then you ought to figure that it will take your staff people up to two years to get the new system into operation.

### *The hysterical era is passing*

... Not too long ago we were flooded with people wanting computers. Every company wanted its name on the list. We got the feeling that they didn't care as much about actually getting the equipment as they did about the prestige involved in being able to say, "We have one on order..." I would say the contracts we have on the books now are much better in the sense that they reflect more prior planning.

... If it's not a sound application it can cost you money and in

part I think we're going through a period of reaction now where potential users are seriously challenging in their own minds some of the early rather blue-sky publicity.

... Well, a sales organization doesn't look at it that way. Comes the time when a guy is ready to place the order, that's the time to take it.

... I'd like to make the point that systems and procedures people don't seem to grasp completely the radically different nature of this thing. I've found that even after we brief them on what an integrated installation can do for them, they are still confused. How do they then prepare a report to their management which is completely accurate and intelligent? It's not entirely fair to blame top management for lack of comprehension.

... That's true. Despite the preliminary training the manufacturers are doing now for the customer's methods people and on up to the middle and even top management, the entire concept is so virgin that confusion is inevitable.

### *So many combinations*

... Let me give you an example. We worked for well over a year with a large manufacturing company. Before we got serious with them they had already done a considerable amount of preliminary studies on payroll and cost accounting. The payroll comes out on Thursday and they want to shorten it up to Tuesday and get the costs out on Thursday. Plans and procedures were drawn up and everybody was set to go.

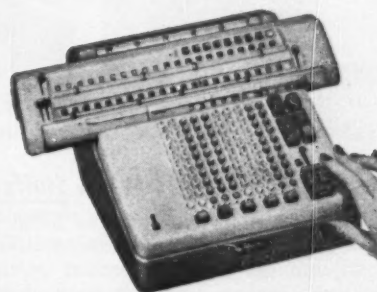
Then the finance man got into it—you cut across so many departments that new people constantly get into the act—and he said, "Why



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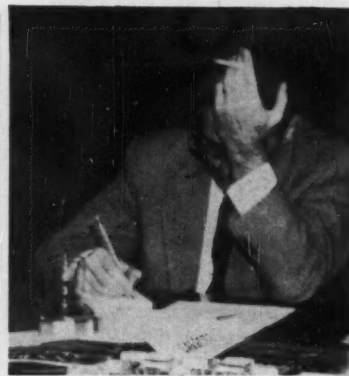
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Ben Garrott of Standard Register: "In the beginning and the end are limitations to what you can do with automatic tape machines. Machines take over completely in the middle..."

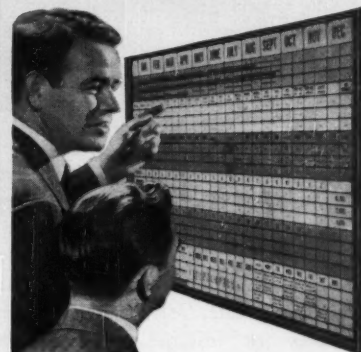
pay off on Tuesday and use up the money? What we want to do is just leave the payroll where it is and bring the costing in ahead of it on Tuesday."

Now that's a good idea, but as you work out these comprehensive programs you run into good ideas all the way through and you have to back off and start over again. No single person or committee can conceive of the best combinations as the program is going along.

... That's what we find on every job. In spite of the pressure to make early deliveries, when you get down on the green to make the final shots, they call up and say, "If you want to delay the equipment three weeks or two months it will be all right with us."

... In the long run industry will solve the problem of education in electronic data processing, or integrated data processing, or whatever we eventually end up calling it, through its own experience in applying it. No manufacturer currently has all the answers. We try, for instance, to educate the buyer-company from the top down. We try to get the top officials to visit the plant to get the general picture of what we're doing. That does nothing more than give them a working knowledge of the terminology and potential applications. Then, we try to get the people from the middle management level who will be guiding the work to attend a course which is fundamentally an introduction to electronic equipment. The people who actually work out the plans get a more detailed course. Then, of

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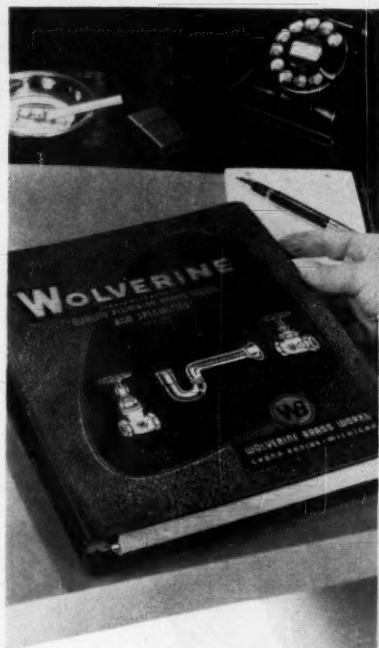
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Heinn custom-styles loose-leaf binders to meet *your* sales need. Because the emphasis is on ideas, uncompromising standards and service, Heinn attracts customers whose names alone are recommendations. For proof of the satisfaction that Heinn delivers, consider the *repeat orders* that keep coming in...some from companies Heinn has served for 40 years!

### New...

"Facts at Your Fingertips," the booklet that simplifies catalog planning. When writing for your copy, please indicate your needs in binders and indexes.



### THE HEINN COMPANY

310 WEST FLORIDA STREET  
MILWAUKEE 4, WISCONSIN

ORIGINATORS OF THE  
LOOSE-LEAF SYSTEM OF CATALOGING  
LEADERS SINCE 1896

course, we have the people whom we have trained who have gone through a course lasting over a year, who work closely with the company.

### Big training problem ahead

... In the electro-mechanical division we have a definite problem of training our sales force to understand what they are selling because it is so complicated in terms of different applications.

There are many cases where a company has gone through a study of integrated data processing and they approach one of our branch offices to ask questions. Our men have the literature to show them and they know really quite a bit about the equipment. They can say "We make this equipment which will do this..." but then the company specialists start asking technical questions about the equipment our men cannot answer.

... I don't think we can train our salesmen to handle this type of equipment with the same type of literature we use on standard products. Then they only get a little knowledge and that is dangerous.

### The automation salesman

... What it amounts to is that we have to produce a new type of man. He is not quite a salesman—more a consultant—and he is not quite a scientist. I was in a group not long ago composed of fellows in the logic, planning and design of computers. They were mainly mathematicians and scientists brought in to put the final touches on the sale. In the group was the almost-sold executive, enthusiastically going a mile a minute, really putting on a pitch about applying digital computers to his business problems. His own systems people were sold and just as he was selling himself, one of these computer men stopped him and said, "Wait a minute. I've got a question: What is a debit?" So that pulled the plug on the whole thing. The point is that the equipment industry needs a man who knows both sides.

... The pattern of selling integrated data processing seems to be evolving like this: First, you hit at a very high level—at the president or at the board of directors. Then they appropriate a sum of money

## Absenteeism slashed after installing



by Watson



Index division at home office of a large nation wide insurance company. The installation of Rol-Dex record handling equipment provided better working conditions, less fatigue; reduced absenteeism substantially. Record handling was speeded up and efficiency of the whole department was improved.

The above case history is typical of the many reasons why Rol-Dex has reduced costs for so many firms that have active record handling problems. In this particular instance:

- absentee record was previously 5.8—since installing Rol-Dex it dropped to 3.2!
- because of the large quantity of records that are visible, checking was speeded up from 6 cards to 11 cards per minute!

Another interesting note that tells its own story is that the company now has a waiting list of clerks who wish to work in the illustrated division. Before the Rol-Dex installation the list was of girls wanting out!

Send for more information on this and  
other ROL-DEX installations.



WATSON MANUFACTURING CO., Inc.  
Rol-Dex Division, Dept. R-2  
Jamestown, New York

Please send me information about ROL-DEX and TRANS-DEX record units.

Company.....  
Name.....Title.....  
Street.....Zone.....  
City.....State.....



WATSON (established in 1887) also builds a complete line of filing  
cabinets and courthouse, bank and hospital equipment.





**Gray AUDOGRAPH V**  
electronic dictation equipment  
needed a noiseless motor to achieve  
High Fidelity voice reproduction.  
A Scruggs 4-pole shaded pole motor,  
tailored to their specifications, met  
the need for quiet operation and  
long life.

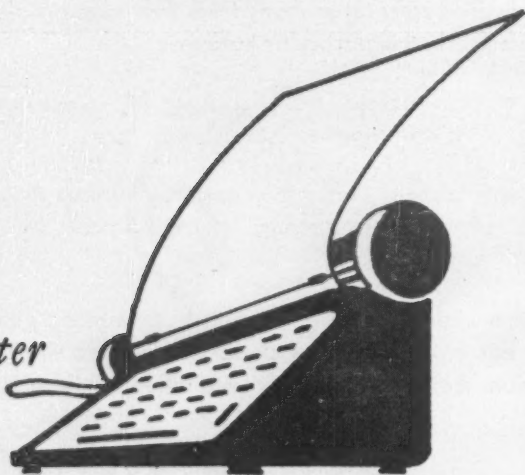
Take a tip from GRAY,  
only one of the leading manufactur-  
ers who take advantage of  
Scruggs aid in developing better  
products. Give us your specs . . . a  
Scruggs motor will be tailored to  
fit them. Write Loyd Scruggs Co.,  
Festus, Mo.

You can stake your reputation on **SCRUGGS MOTORS**

THE *Loyd Scruggs* COMPANY  
FESTUS, MISSOURI

MANUFACTURERS OF PRECISION INSTRUMENTS SINCE 1934

"letters  
look better  
on



**WESTON BOND"**

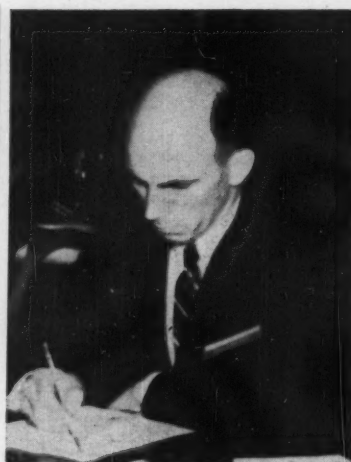


Typing goes faster, letters look cleaner, neater,  
more impressive when your letterhead is on new,  
brighter, whiter Weston Bond. Your printer  
will approve and gladly use this economical rag  
content paper made better by Weston.  
Write for sample book. Address Dept. DR

**BYRON WESTON COMPANY, DALTON, MASSACHUSETTS**  
Makers of Papers for Business Records since 1863



called upon by  
manufacturers  
of nationally  
famous products



Constable of IBM: "Our adver-  
tising approaches this from an  
institutional angle, so that we  
may stress the organization be-  
hind the equipment rather than  
the specific equipment itself."

anywhere from \$25,000 to a quarter  
of a million to hire the right peo-  
ple to make a study. I'm talking  
about data processing that includes  
a large scale calculator.

Then you sit down with them  
and write up a bill of particulars  
which includes computer evalua-  
tion, management advantages, staff  
training, programming training, or-  
der equipment, initial program,  
building arrangement, installation,  
and a checkout system when you  
begin operation.

#### Key comments from producers:

. . . The major market for com-  
puters will be in the intermediate  
size. A large portion of it will come  
from companies using punched  
card equipment now.

. . . We've been compiling li-  
braries of all the programming rou-  
tines by application and industry  
so that by using parts of them you  
can cut down your programming  
costs considerably. Automatic pro-  
gramming is on the way now.

. . . Most companies buy a com-  
puter to put on payroll. Then, in  
the spare computer time, they use  
it for complex sales and market  
analysis.

. . . In less than five years  
now, independent companies will  
be operating regional data process-  
ing centers for the small manufac-  
turer in the area.

. . . There's going to be a defi-  
nite trend toward modifying more

## first flight



Without trust in Daddy's strong arms,  
fear would blot out the fun of first flight.  
But because Daddy's smiling, loving  
face is below, life adds a thrilling new  
dimension, founded in love and trust.

All our adventures begin in and  
come home to the security we cannot  
do without.

To give and to get security is the main  
business of living. It is a privilege and  
a responsibility. It provides us life's  
finest rewards.

Have you ever thought that this  
security is possible only in a democracy?  
We continue to grow stronger as a  
nation when more and more secure  
homes are bulwarked together. The  
security of your country depends on  
your security.

**Saving for security is easy!** Here's a  
savings system that really works—the  
Payroll Savings Plan for investing in  
United States Savings Bonds.

Go to your company's pay office,  
choose the amount you want to save.  
That money will be set aside for you  
before you even draw your pay. And  
invested in Bonds which are turned  
over to you.

If you can save only \$3.75 a week on  
the Plan, in 9 years and 8 months you  
will have \$2,137.30.

U.S. Series "E" Savings Bonds  
earn interest at an average of 3% per  
year, compounded semiannually, when  
held to maturity! And they can go on  
earning interest for as long as 19  
years and 8 months if you wish, giving  
you back 80% more than you put in!

For your sake, and your family's,  
too, how about signing up today? Or  
join the Bond-A-Month Plan where  
you bank.

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# Choosing an accounting machine?



## Only Underwood offers a choice of three different models

### UNDERWOOD SUNDSTRAND

Your greatest value in non-descriptive accounting machines:

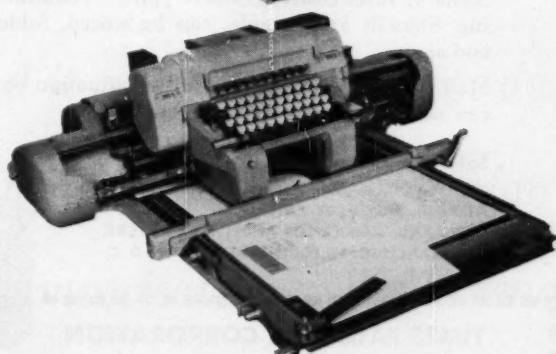
- 10-Key "touch-operated" numerical keyboard . . . the simplest keyboard yet!
- Mechanical Brain directs every computing and printing operation automatically.
- Automatic Balances . . . Automatic Sub-Totals . . . Automatic Totals.
- Scientifically designed front feed carriage . . . with crystal clear visibility.
- Program Control . . . changes machine from one posting operation to another in an instant.



### UNDERWOOD SIMPLAMATIC

High speed electric accounting with a typewriter keyboard:

- Automatic Balances . . . Automatic Sub-Totals . . . Automatic Totals.
- Mechanical Brain directs every computing and printing operation automatically.
- Direct subtraction and credit balance in every register.
- Front or rear feed carriages available . . . full visibility!



### UNDERWOOD ELLIOTT FISHER

The only writing-accounting machine with a flat writing surface:

- Exclusive flat writing surface permits forms to be inserted and removed with unmatched speed . . . and no handling of carbon paper!
- Single keyboard . . . the *standard* electric typewriter!
- Direct subtraction in all registers.
- Unit construction . . . 1 to 30 column registers.
- Full visibility.

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UNDERWOOD  CORPORATION

One Park Avenue, New York 16, N. Y.



types of equipment. I know our competitors are making equipment to punch tape, as we are, but at the moment we are all somewhat dependent on some other company to read that tape, produce the information in the form of tabulating cards or typewritten records or what have you. Our ultimate aim is to have our equipment both read and punch tape. That's the way we're aiming our development now.

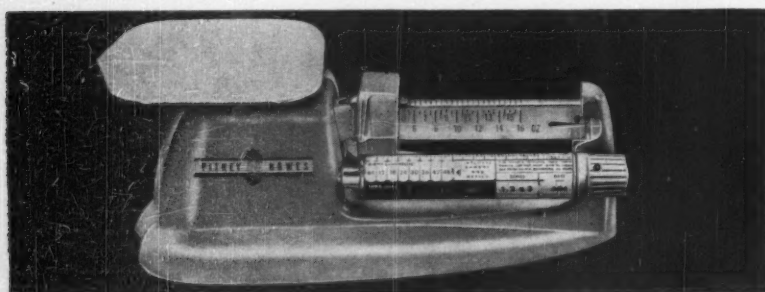
... An electronic computer, even a medium-size one, turns out an awful lot of information. It's going to demand different kinds of statistics fed into it—reports you are not getting now which analyze new classes of market information. To feed that into a processing machine will take large-scale buying of the fastest types of conventional equipment as well as tape and card machines.

... Now that we're aiming at handling data as automatically as possible from one end to the other, we're going to be a lot more careful about mechanizing at the point where the data originates, so that we can get it out of the original recording in such shape that these

mechanical and electronic wonders can go ahead and work on it without having some human in there to make translations.

... We started talking to a company president who was interested in electronic data processing. It turned out that he didn't have the volume to justify it although he would have loved to so he could talk about it. Instead we sold him \$30,000 worth of conventional equipment to do the job. Without the stimulus of electronics to get him thinking about his data processing problem, we would not have made the sale.

... If you listen to the engineers of the major companies talking about the proper number of channels on the tape, you find that each has a reason for his particular type of code. I don't think you're going to find anybody saying, "OK, we'll be big-hearted about it and convert every damn one of our machines to your code," and I don't think anybody will compromise at the moment. I think that the way it will work out is that the company with the biggest sales will eventually force everybody else to swing over to its code, but in the meantime it is



## Now! A small, low cost, precision mailing scale!

A midget in size, but a big saver of postage and mailing time, this newest Pitney-Bowes scale is just what the small office needs.

Precision-built, it has a cylindrical computer that shows clearly the postage needed, from 1/2 ounce to 1 pound. Prevents loss of postage through overpayment... and loss of good will through underpayment, with resulting "postage dues."

Other PB Scale models, including parcel post up to 70 lbs. Ask your nearest PB office to show you, or write for booklet.

**FREE:** Handy desk or wall chart of Postal Rates with parcel post map and zone index.



**PITNEY-BOWES**  
**Mailing Scales**

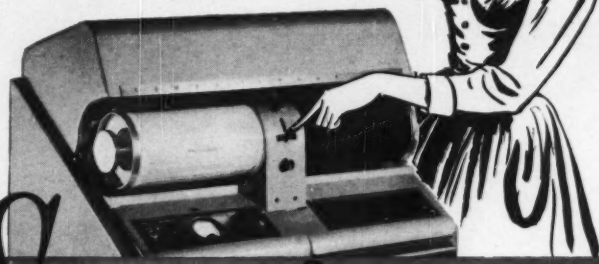
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Originators of the postage meter... offices in 94 cities

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get fast, accurate copies of  
any graphic material.

Just

push a  
button...



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## THE ELECTRONIC COPYING MACHINE

for mimeograph stencils, offset plates,  
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Just push a button—and the operator can go on to other work. Stenafax shuts itself off. It copies office forms, news clippings, typing or any graphic material. It is a complete copying unit, requires no chemicals or developing, no special powders, light box or heat treatment.

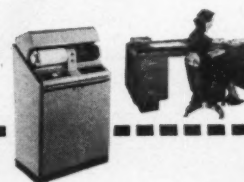
It makes stencil or offset plates in 6 minutes or less... or a single dry positive copy in 3 minutes or less—on a working area of 8 1/2" x 14". Easy to maintain, movable—can be plugged into ordinary outlet for on-the-spot copying at important meetings.

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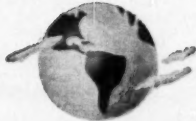


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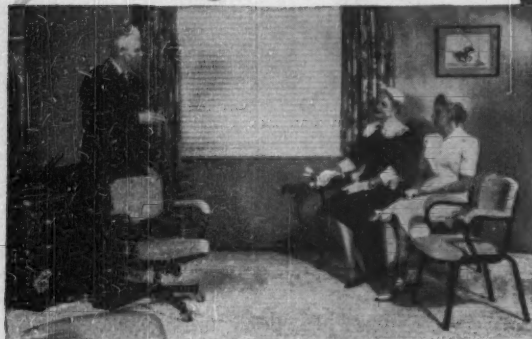
It's crystal clear, unbreakable, mailable, post card size, filable —and it records an average day's dictation  for just a few pennies. Write  for Dictaphone's illustrated booklet — “Communication.” We'll send you a free Dictabelt, too.

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YOUR SENSE OF ECONOMY

Comfortable seating for yourself and your staff, for clients and customers . . . in fresh new design concepts that are pleasing to the eye . . . rigidly constructed for long service, and with easily-removable coverings of elastic U. S. NAUGAHYDE; other fabrics in many colors available. "Wall-saver" side and arm chairs with padded or plastic arm rests, and two handsome swivel models with arms . . . side chairs as low as \$1.40, swivels as low as \$3.00. Ask to see them today!

Ask your Cramer dealer  
OR WRITE DEPT. DR  
CRAMER POSTURE CHAIR CO., INC.  
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MAKERS OF CRAMER POSTURE CHAIRS



**FOR COMFORT,**  
bonded foam latex padding; 2" on seat, 1" on back and arm rests.



**TON-TESTED!**  
Modern testing showed these chairs still rigid under more than a ton of pressure.



**"WALL SAVERS"**  
Backs of side and arm chairs cannot touch wall even when legs do.



**THEY STACK—**  
Side chairs designed to store easily and simplify floor-cleaning.

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10-55



McLeod of Burroughs: "The office equipment industry is carrying out a greater sales and service program than any of us have seen so far."

a problem for us as manufacturers and for the poor consumer.

Our Thanks To . . .

Monroe Calculating Machine Company, Inc.: W. B. Rohrbach: Sales Dept.; Mr. William Burkhardt: Director of Electronics Research & Development.

Burroughs Corporation: R. W. McLeod: Manager, Special Machines Dept.; Mr. Frank Ladwig: Manager, Computer Section.

Standard Register Company: P. Ben Garrott: Director of Applications Research.

Underwood Corporation: W. F. Arnold: Vice-President; N. J. Leather: Samas Punch Card Div.

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Western Union Telegraph Company: A. M. Meresom: Private Wire Service; Rudolph Borschardt: Market and Research Department.

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Page 105, Where Do You Go from Here? Start Now to Plan Your Studies.

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A COMPANY, INCORPORATED  
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# 35 million Ozalid copies of invoices—in 1955!



*...which represent more than a million hours  
of payroll time saved in a single year...  
plus expedited order filling and billing*

Is it any wonder that every year more and more firms resort to Ozalid — to speed and simplify order filling, reduce errors, save time and work in invoicing or billing... and substitute for scarce clerical workers.

The Ozalid system starts with a translucent order form, written or typed. On the order form are entered prices, terms, discounts, stock serial numbers, specifications, delivery instructions, and any other required data.

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You can also Ozalid copy letters, reports, bulletins, statements, ledger sheets, records. For cumulative records or statements, add new entries on the original; and Ozalid copies serve as current reports.

Ask the nearest Ozalid distributor (*see phone book*) to show you how Ozalid can reduce work and costs for your company. Or write 43 Ozaway, Johnson City, N. Y. In Canada, Hughes Owens Co., Ltd., Montreal.

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## OZALID



OZAMATIC (left) is a table model, handles sheets as wide as 16", and can make up to 1000 prints an hour.

BAMBINO (right) is the smallest, fastest, low-priced office copying machine; will make 200 copies an hour, on sheets as wide as 9", for less than 1½¢ a copy.





The impression you make there—



depends on  
the impressions  
she makes here

Better be sure  
she uses  
a ribbon by--



**Y**OUR LETTERS will be neater, cleaner, when they are typed with Old Town typewriter ribbons. These quality-controlled ribbons are made from the finest inks and fabrics. They are self-renewing, wear uniformly and produce clear, sharp characters at all times without blur or smudge. And your secretaries will appreciate the smooth, clean erasures.

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Prove to yourself that an Old Town ribbon *does* make a difference in your correspondence. Simply have your secretary address her request to us on your company stationery stating the make and model of her typewriter and the kind of type—pica (large) or elite (small). We will send her, free of charge or obligation, an Old Town ribbon for her machine along with an interesting informative folder describing the various fabrics and inkings for typewriter ribbons and the uses for which each is designed. Write Old Town Corporation, 345 Madison Avenue, New York 17, N. Y. Dept. DR-10



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**TYPEWRITER RIBBONS**

*Here's an executive appraisal of the new and recent books, articles, films, and other materials on office automation. For your future study program, you'll want to clip the list of meetings and conferences that are to be held in the months ahead.*

## WHERE DO YOU GO FROM HERE?

### START NOW TO PLAN YOUR STUDIES

THOMAS KENNY  
Associate Editor

**L**IKE a mosquito in a nudist camp, the management man who approaches the sprawling body of published material on office automation, doesn't quite know where to begin. There is already a great deal of information in print on automatic data processing. However, as with most writing on a new and fast-growing field, it is

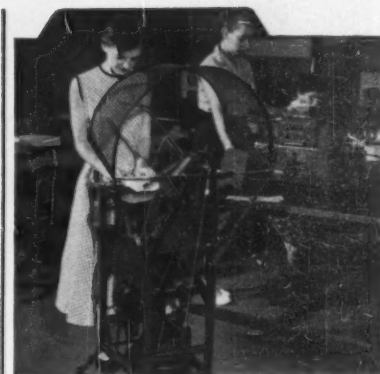
uneven. Much of it is devoted to detailing the applications already in operation in several large companies. When confronted with the staggering stacks of published information, an executive coming fresh to the topic is likely to wish for a robot reader to winnow the chaff.

Short of that, he can make use of

some basic guides described below and also consider various facets of this many-faceted subject, thus securing a selective and accessible approach to the field. For top management, a newly-announced book, *Office Automation* by R. Hunt Brown (Automation Consultants, 1450 Broadway, New York 18, N.Y., \$12.50) appears to fill a serious gap in providing an over-all view of the subject with the technical aspects translated into meaningful terms.

The immediate problem of setting up yardsticks for determining if a changeover to electronic or electro-mechanical data processing is profitable for you has been largely neglected in most of the books, articles, and pamphlets. Proceeding from the premise that a changeover is necessarily a good thing, they describe the complexities of processing data. Among the few publications which do consider yardsticks for a changeover is: *Electronic Data Processing in Industry* (American Management Association, 330 West 42nd Street, New York 36, N.Y., 257 pages, \$7.75).

Another area which needs more attention is the use of integrated data processing by the medium-



**"Mechanized mail tying is needed to keep pace with other fast office machines,"**

says Allen Grawoig, Vice President, CONTINENTAL PRODUCTS, Chicago

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Mail is taken from the folding machine, inserted into envelopes, and passed through the postage meter. As it emerges from the meter, the operator of the Bunn Tying Machine merely places a stack on the machine and steps on the convenient pedal.

In 1½ seconds, or less, the bundle of mail is tightly tied with a slip-proof knot which is fully approved by postmasters everywhere. Adjustment to any size envelope or bundle is completely automatic... the tension is uniform and always correct, and just the right amount of twine is used every time.

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#### How's That Again?

**Blue sky approach**—one of the two basic approaches to the use of electronic data processing systems in business. It aims for the development of information not previously obtainable because of cost, time for compilation, and other factors. By securing this information, management is able to reach decisions not previously possible—information which will enable management to gain and hold an edge in the swift competitive race.

**Brute force approach**—motivated primarily by considerations of economy, this approach involves reductions in clerical costs by the elimination of a large volume of paperwork and personnel. Of course, a change-over to EDP may result in both new information and cost reductions.

**Debug**—Not the duty of an exterminator. Rather, to remove malfunctions from a computer or mistakes from an IDP routine.

**Bus**—Not the long way home, but rather the shortest, for it means a path over which information is transferred, a trunk.

**Block**—a group of words considered or transported as a unit. The person in charge of this job is not called a block-head.





Available in electric-powered and mechanical models . . . from new table-top to new tandem

3 models, 6 sizes to fit your specific need!

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sized or smaller office. Most studies have been devoted to U. S. Steel, General Electric, Detroit Edison, and other large companies. If not giant computers, many of the techniques of IDP are applicable to the smaller office, and at substantial cost savings, too. One of the few articles on the subject: "Integrated Data Processing for the Smaller Office" by Ralph W. Fairbanks in the June and July 1954 issues of "Office Management" (212 Fifth Avenue, New York 10, N.Y., 35 cents a copy).

A clear, concise description of the abilities and limitations of electronic computers would be a worthwhile addition to the literature on the subject. Some writers have touched upon this topic. In the October 1954 issue of the magazine, "Computers and Automation" (36 West 11th Street, New York 11, N.Y., \$1.25 a copy), Irving Rosenthal and John H. Troll have an article entitled, "The Capacity of Computers Not To Think" which discusses the limitations of electronic data processing equipment. The director of the Computation Laboratory of Harvard University considered the limitations of computers in a recent speech which is available free from the American Gas Association, 420 Lexington Avenue, New York 17, N.Y.

The core problems of personnel displacement and adjustment and the need for skilled technicians to operate electronic equipment are

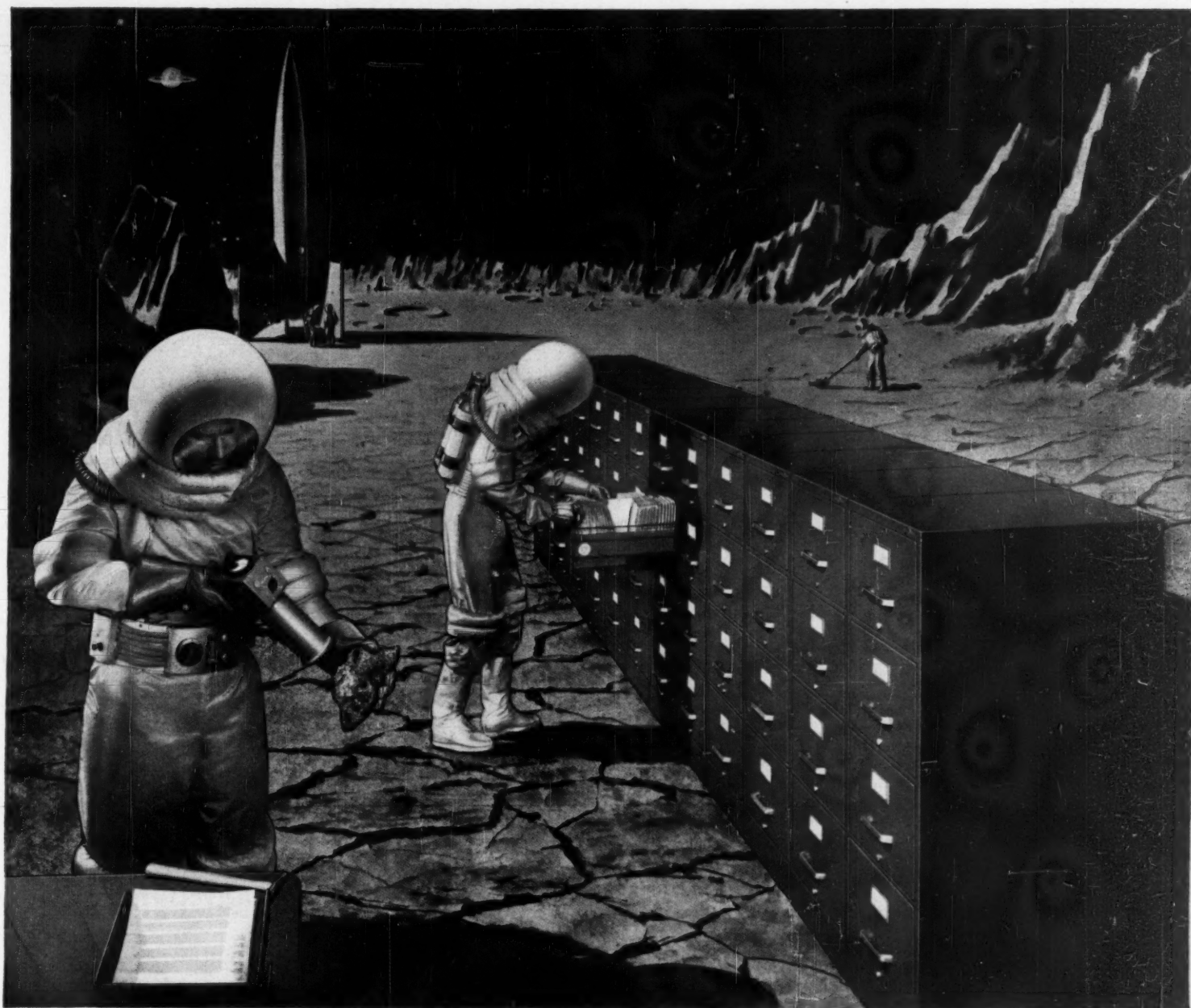
receiving increased attention, although much research is yet to be done. In the AMA publication, *The Impact of Computers on Office Management*, there is a stimulating and informative article, "Will Electronics Make People Obsolete?" by J. Douglas Elliott of Detroit Edison. The author's conclusion, based on the experience of his company, is a resounding "no." Also discussed is the need for highly-skilled specialists. In the December 1954 issue of "Computers and Automation," Fletcher Pratt considered this problem in his article, "The Human Relations of Computers and Automation."

The most comprehensive study of the problem of training personnel for EDP can be found in the *Proceedings of the First Conference on Training Personnel for the Computing Machine Field*, which is published for \$5 by Wayne University Press, 4841 Cass St., Detroit, Michigan.

While some increased attention has been devoted to personnel displacement and adjustment following the installation of electronic data processing, little has been said about the possible effects on management. Perhaps this is because EDP is considered by many people to be just another management tool, although a very high-powered one at that. However, in the May 1954 issue of "Advanced Management" (411 Fifth Avenue, New York 16, N. Y., \$1 per copy), M. L.

### **Conferences and Courses**

- October 10-12—*National Conference* of the National Office Management Association (132 West Chelton Avenue, Philadelphia 44, Pa.). Will feature electronics and integrated data processing. At Atlanta Biltmore Hotel, Atlanta, Ga.
- October 10-12—*The 8th International Systems Meeting*, Sheraton-Cadillac Hotel, Detroit, Mich. Sponsored by the Systems and Procedures Association of America (Box 281, Wall Street Station, N.Y.C.), this conference will include general sessions and seminars on many aspects of electronic data processing and exhibits of equipment.
- October 17-19—*Annual Office Management Conference*, Hotel Statler, New York, N.Y. Much of this meeting will be devoted to reports by various companies on their experiences with integrated data processing. American Management Association, 330 West 42nd Street, New York 36, N.Y.
- November 7-9—*Eastern Joint Computer Conference*, Hotel Statler, Boston, Mass. This rather technical conference is devoted to the role of computers in business. Institute of Radio Engineers, 1 East 79th Street, New York, N.Y.
- November 14-15—*Conference in Office Automation*, Shoreland Hotel, Chicago, Ill. This meeting for policy-level executives will consider basic problems involved in integrated data processing. For further information: Gordon L. Mattson, University College, University of Chicago, 19 South La Salle Street, Chicago 3, Ill.
- February 27-29—*Annual Conference and Exhibit on Electronics*, Hotel Commodore, New York, N.Y. The theme will be management's use of electronic data processing. American Management Association.
- *Courses* in EDP are given by several of the computer manufacturers, by various universities, and other groups. For a complete run-down of the courses available in the months ahead, see pages 94-105 in *Electronics in Business*, published by the Controllership Foundation, Inc., 2 Park Avenue, New York 16, N.Y., \$2.



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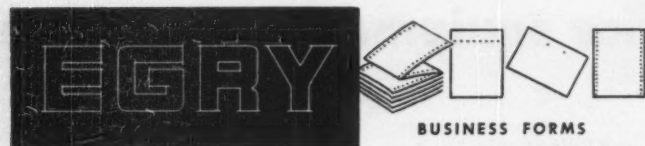
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Hurni in an article entitled, "Must Management Change for Automation?" stresses that executives must adopt a new disciplined way of thinking. In the April and May 1955 issues of "Office Management," Robert M. Smith considered the effects on management in his article, "Decentralized Management Not Threatened by Data Processors, AMA Told."

Another aspect of electronic data processing which deserves further exploration is its effect on auditing procedures, which depend on many original business papers, slated to disappear or at least diminish as a result of reducing the documents to tape form. In the May 1955 issue of the "Journal of Accountancy" (270 Madison Avenue, New York 16, N. Y., 75 cents a copy), A. B. Toan Jr. analyzes the concessions which will have to be made in an article entitled, "Auditing, Control and Electronics." Other articles on this problem appeared in the July 1954 issue of the same publication and in the August 1954 issue of "The Controller" (2 Park Avenue, New York 16, N. Y., 60 cents a copy).

## Basic Reading

Here is an annotated listing of the outstanding books and pamphlets recently published on office automation.

**ELECTRONICS IN BUSINESS**, edited by Herbert F. Klingman. *Controllershship Foundation*, 2 Park Avenue, New York 16, N. Y., 176 pages, \$2.

This basic reference guide is virtually indispensable in providing an over-all view of the entire subject. It includes a lengthy annotated bibliography of books, articles, pamphlets, and other material as well as descriptions of equipment and installations. The section on EDP courses is the most complete in print now. Present plans call for semi-annual supplements to keep this reference guide up to date. Published July 1955.

**OFFICE AUTOMATION**, by R. Hunt Brown. *Automation Consultants, Inc.*, 1450 Broadway, New York 18, N. Y., 202 pages, \$12.50.

Authored by a consulting engineer, this is the most comprehensive volume recently published on electronic data processing. In 48 chapters, the book discusses for the *non-technical* reader virtually every aspect of EDP, including some seldom touched upon, such as missing links in equipment, what computers cannot do, and the effects on personnel. Also offered is a service—the first of its kind—to keep this large loose-leaf manual up to date. Published September 1955.

**DATA PROCESSING BY ELECTRONICS** by Haskins and Sells, 67 Broad Street, New York 4, N. Y., 113 pages, free.

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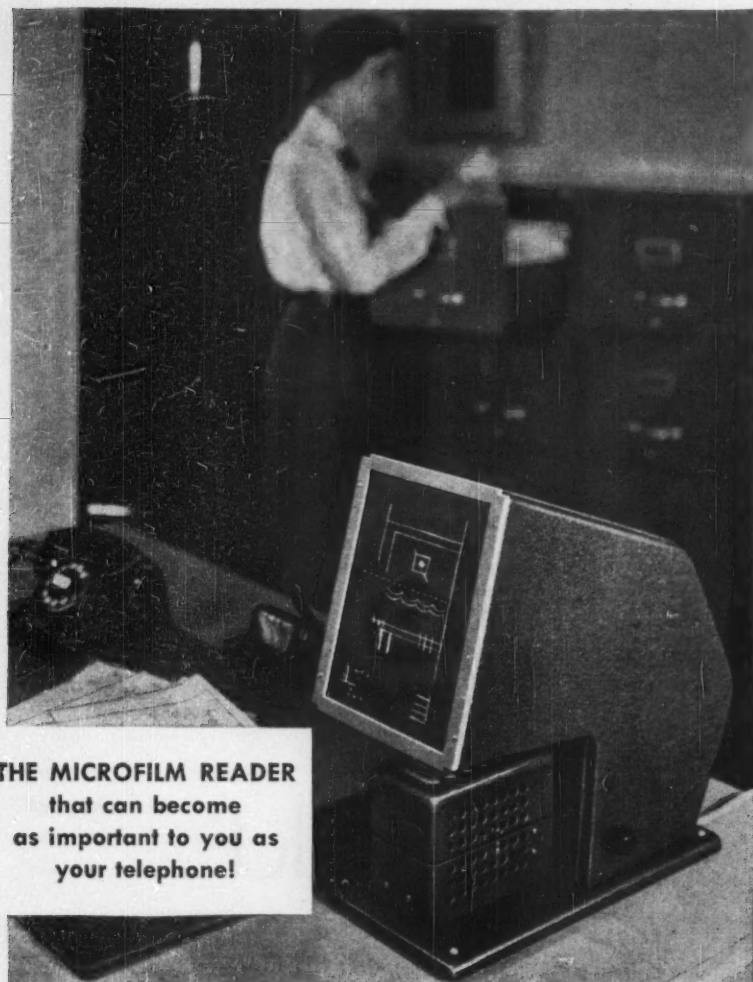
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nical and the broad basic approaches, this handy volume is designed to provide the executive with an understanding of EDP as a management tool. The scope of EDP, the fundamentals of programming, the preparations for the electronic system, and various applications, are covered. There is a very valuable section on the operating characteristics and costs of various electronic data processing systems. Published May 1955.

**ELECTRONIC DATA PROCESSING IN INDUSTRY.** *American Management Association, 330 W. 42nd St., New York 36, N. Y., 257 pages, \$7.75.*

Subtitled "A Case Book of Management Experience," this volume brings together the papers and other material presented at the Special Electronic Conference held by the AMA last March. Discussed in detail are the necessary preparations, several applications and their results, and future developments. Some other areas, usually neglected which are discussed in this volume: personnel adjustments, small computers, the need for experts, and criteria to determine if a change-over to EDP is profitable. The glossary is the most comprehensive and up-to-date in print. Published July 1955.

**INTEGRATED DATA PROCESSING BRINGS AUTOMATION IN PAPERWORK** by P. B. Garrott. *The Standard Register Co., Dayton 1, Ohio, 26 pages, free.*

This special report is a reprint of a series of articles in "Automation" magazine by the Director of Market Development at Standard Register. Through a series of diagrams and illustrations the author shows how data are made to move through the office with automatic precision. Published February 1955.

**STRENGTHENING MANAGEMENT FOR THE NEW TECHNOLOGY.** *American Management Association, 64 pages, \$1.75.*

The director of the digital computer laboratory at M. I. T. concludes that the design of computers is ahead of plans for their use. He discusses the areas of EDP knowledge management will have to explore in order to make the maximum use of this new high-powered tool. Points out that there are three main uses of EDP: to cut the costs of processing data, to secure more timely and comprehensive information for management decisions, and

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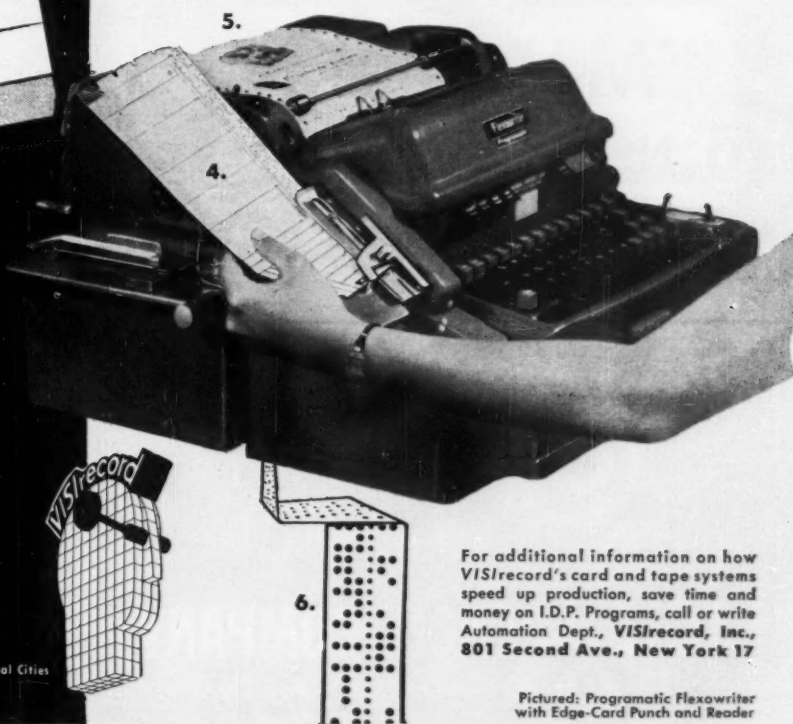
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to aid in decision-making by such new techniques as operations research and linear programming. Published November 1955.

THE IMPACT OF COMPUTERS ON OFFICE MANAGEMENT. *American Management Association*, 60 pages, \$1.75.

Describes various EDP applications and their effects on management methods. Answers the provocative question, will electronics make people obsolete? Published December 1954.

A NEW APPROACH TO OFFICE MECHANIZATION: INTEGRATED DATA PROCESSING THROUGH COMMON LANGUAGE MACHINES. *American Management Association*, 62 pages, \$2.50.

The pioneering of U. S. Steel subsidiaries in the new field of integrated data processing is described step-by-step in this illustrated booklet. This is an invaluable source book for methods analysts. Published April 1954.

BIBLIOGRAPHY ON THE USE OF IBM MACHINES IN SCIENCE, STATISTICS, AND EDUCATION. *International Business Machines Corporation*, 590 Madison Avenue, New York 22, N. Y., 60 pages, free.

articles of primary interest to research workers in science and statistics. Published January 1954. New edition expected early in 1956.

THE COMPUTER DIRECTORY, 1955. *Berkeley Enterprises, Inc.*, 36 West 11th Street, New York 11, N. Y., 164 pages, \$4.

Includes an annotated listing of individuals and organizations in the computer field as well as a section on products and services for sales. Published June 1955.

AUTOMATION by John Diebold. *D. Van Nostrand Co.*, 250 Fourth Ave., New York 3, N. Y., 181 pages, \$3.

A painless primer to the entire subject of automation, both office and factory, it is probably the best place to begin for a basic understanding of the field. The author, who is said to have coined the term, "automation" offers a provocative study of the entire subject including its history, social implications, and possible future development. Published 1952.

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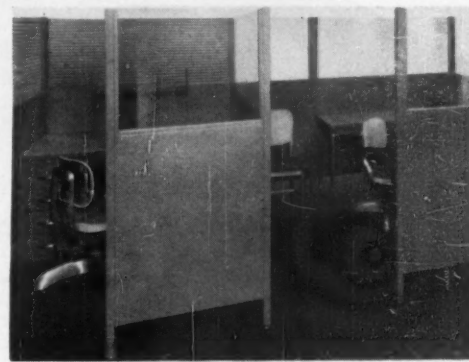
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demonstrates in detail the techniques of office automation actually in use. It shows the various types of equipment and how they can be linked together to form a common language system. Can be rented for \$75 for one day and \$35 for each additional day from the Management Film Library, American Management Association, 330 West 42nd Street, New York 36, N. Y. Included with the film are a discussion guide, résumés of the film, and other material. (For a complete review of the film see the December 1954 issue, page 23.)

*Direct Line to Decision* (22 minutes, color) was made as a promotional film for IBM's giant Series 700 computers which are shown preparing inventory data and at other tasks. (Reviewed August 1955, page 76.) Available free from International Business Machines Corporation, Endicott, New York.

*Piercing the Unknown* (22 minutes, color) also produced by IBM, recounts the history and development of electronic computers. Also produced and distributed by IBM. (Reviewed January 1954, page 143.)

*Univac* (23 minutes, b&w) is a straight-forward low-budget film which shows Remington Rand's giant computer system at work preparing payrolls, factory schedules, and other tasks. It can be borrowed free from Visual Aids Department, Remington Rand, Inc., 315 Fourth Avenue, New York 10, N. Y. (Reviewed February 1955, page 67.)

*The Search — Automation (MIT)* is reviewed on page 139.

## Safeguard Your Business Secrets

Now you quickly and easily destroy confidential papers and obsolete records right in your own office.

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Portable shredding machine designed especially for office use, the size and weight of a business typewriter!



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### Telephone systems in 52 countries helped to make this intercom call!

Inter-office and in-plant calls made over Federal dial intercom systems bring into play telephone engineering experience that reaches around the earth . . . into 52 lands . . . served today by automatic switching equipment from telephone factories of the world-wide International Telephone and Telegraph Corporation.

This unique know-how of IT&T associates is not confined to the manufacture and installation of complete dial systems for most of the world's telephone companies, but embraces decades of experience in operating nation-wide telecommunication networks!

Now, business and industry, large or small, can draw on this vast telephone background through Federal dial intercom . . . to obtain fast, automatic, and confidential *intercommunication* . . . with provision for *dial-and-dictate* service . . . all from the *same* dial telephone.

Federal dial intercom is the proved-in way to give new speed to *inside* calls without obstructing *outside* calls . . . to accomplish *more* work per man-hour . . . to bring to your *internal* communication needs dial performance that's "Certified by a World of Research!"

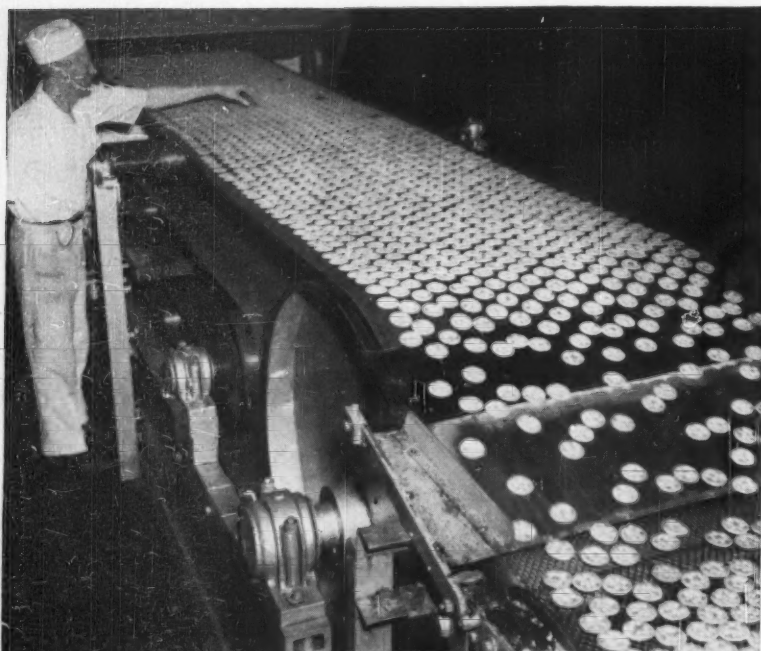


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combine movement and processing

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Whether it's copper brazing at 2050°F, glass annealing at 1000°F, wet processing, or flash-freezing at sub-zero temperatures, all-metal woven wire conveyor belts can help cut your operating costs. Continuous, uniform processing at controlled rates of speed eliminates profit-stealing batch handling and increases production.

Cambridge Woven Wire Conveyor Belts are individually selected for your installation from a wide range of specifications. The metal or alloy from which they are woven is specially determined after investigating the resistance to heat or corrosion required by your operating conditions. Open mesh, also selected according to your requirements, cannot trap spilled materials . . . reduces clean-up time. Uniform continuous construction minimizes uneven wear, localized weakening and costly shutdowns.

No matter how you look at it, CAMBRIDGE Woven Wire Conveyor Belts are invaluable aids to AUTOMATION . . . help beat your biggest competition, COST!

Ask your Design Department to call in your Cambridge Field Engineer to study your processing and discuss ways to cut costs by combining movement with processing. Your engineers can rely on his advice. The Cambridge man nearest you is listed under "Belting, Mechanical" in your classified telephone book.

Write for your **PERSONAL COPY of 130-PAGE REFERENCE MANUAL** illustrating and describing woven wire conveyor belts. Gives mesh specifications, design information and metallurgical data.



## The Cambridge Wire Cloth Co.



Department Y,  
Cambridge 10,  
Maryland

OFFICES IN PRINCIPAL INDUSTRIAL CITIES

## LEADERSHIP

Continued from page 38

aggressive growth, Elliott-Fisher chose to continue along the successful path of diversification. What other product or products could it successfully develop and market on the basis of its established reputation of leadership?

Industries, fields, markets—all were surveyed and studied. The answers were not long in coming. The product: typewriters. The vehicle: a combination of Elliott-Fisher and Underwood.

Hardly unique in our business community, amalgamation can be the most efficient and successful means to extended diversification and leadership. Its advantages, of course, are many. Amalgamation affords a tremendous area for exploitation and growth of joint marketing operations. International as well as domestic subsidiaries and branches can all gain from the additional service available through combined forces, and prestige can be enhanced for all parties.

Economic dormancy, such as that of the 1930's, worked its havoc with the progress of many companies. Flexibility proved the criterion, and industrial leaders had to step lively and look sharply at the path ahead to insure their position. The temper of the times indicated the need for more and better research to expedite the development of new, improved, superior products. We learned to our great satisfaction the value of unifying our research program soon after establishing our General Research Laboratory in 1936. Research and development can be greatly expanded by such a move, for engineers, scientists, and marketing experts in different areas can exert a wonderful stimulus upon each other when working side by side.

Leaders of industry were just getting up steam in their rise from the depression doldrums when World War II came as a sharp interruption to their plans for a continued progress.

The period immediately following the war proved yet another major test to all of industry, leaders and followers alike. Our own experience was like that of a number of others engaged in essential production: we were among the last business machine companies to

## PRECISION

### STAMPINGS in SMALL LOTS



You can benefit from our 31 years of short run stamping experience. Specializing in low cost tools, close tolerance, and prompt deliveries.

Write today for full particulars and the name of our trained representative.

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## 1956 1st QUARTER BUSINESS MENS EXPECTATIONS

THE OUTLOOK FOR  
EMPLOYMENT  
INVENTORIES  
PROFITS  
SALES  
PRICES

in the **NOVEMBER**  
**DUN'S REVIEW**  
and Modern Industry

reconvert to peacetime production. In almost all industries in which the leaders delayed reconversion, other concerns inevitably grasped the advantage. The difficulties attendant to the resumption of peacetime production were great for all industries, while the demand for consumer products was tremendous. Thus, many companies resumed maximum production of their established models in an effort to facilitate the difficult task of re-conversion.

With the satisfaction of immediate demand, the need for new and



*The* AUTHOR

LEON C. STOWELL, Chairman of the Board, Underwood Corporation, was elected to that office in August 1955, after having served from April 1945 as President of the same company. A Harvard graduate, he served with the U. S. Army in World War I, and was discharged with the rank of Captain. At the close of that war he joined Dictaphone Corporation, rising to the presidency in 1927. In 1936 he joined Underwood as Executive Vice-President.

Mr. Stowell is a Director of Dictaphone and Pitney-Bowes, Inc., and is a member of many management organizations, AMA and ASSE among them.

improved products again became dominant. In 1946, as another "natural" development of our basic product, we answered the public's demand for faster, more versatile equipment with an all-electric typewriter—the first to be produced by a standard typewriter manufacturer.

Within a few years after the war's end, however, the cumulative effects of depression, war, and the aftermath to war told on many companies. The danger of standing still was obvious, the need for continued growth was essential. Until now there had been the excellence of the basic product, then simple diversification, then extended diver-

sification. Yet, with each step there appeared the need to keep looking into the future, to plan what should be done next.

Further diversification, we determined, would be pursued on all levels to the fullest extent possible. Every aspect of the industry would be included; we would be the first company to provide a complete line of business machines, from a portable typewriter for the school child to complex electronic computers for great corporations.

As we, like so many other companies, face the future with renewed confidence and enthusiasm, we are looking at and frequently discussing the long-range plans. Where are we headed? Are there yet newer, more enduring elements with which to attain and maintain a dynamic, aggressive, responsible leadership?

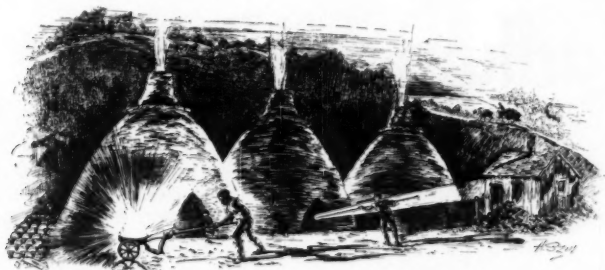
### One Best Path

I believe that further problems do lie ahead. Their greatest significance, however, can be an occasional reminder that true industrial leaders can never rest on their laurels, must continually strive for progress.

The instruments remain essentially the same: laboratory development of products of excellence; diversification of related product lines; market development; extended diversification; over-all expansion through merger or acquisition; and increased service.

The true measure of a successful company is the regard in which it is held by the people it serves. Nothing makes friends faster or stronger than good service—nothing destroys leadership more quickly than poor service.

Progress along the paths to leadership is charted by milestones placed there through customer service and resulting customer confidence. This, in the final analysis, is the ultimate objective of any business enterprise.

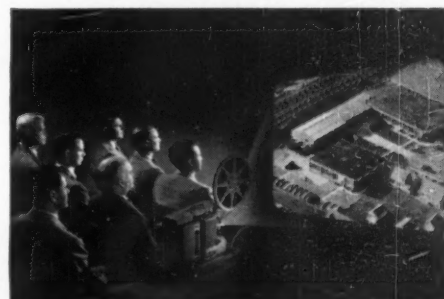


MODERN INDUSTRY

## Can you use the power of pictures...

### 1. to keep orders flowing in?

"Wrap our plant in a package so we can carry it along on sales calls!" With these instructions to his movie producer, General Manager Jack Kleinoder last year ordered a 20-minute 16mm color film for *Volkert Stampings, Inc.* The film, which explains Volkert's electronic parts manufacturing services to development engineers, has already paid big dividends. "We credit the film," says Kleinoder, "with a lot of unsolicited orders."



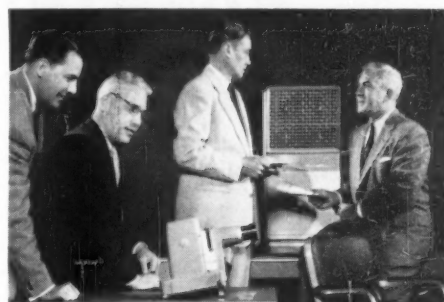
### 2. to snip off production waste?

*B. F. Goodrich* snips off production waste at its base—with movies. Films of plant operations teach foremen the principles of motion study in a work-simplification course. With this knowledge, the foremen are eliminating thousands of dollars' worth of lost time and waste motion in their departments.



### 3. to increase sales force enthusiasm?

*Chrysler Airtemp Sales Corporation* trains its sales force through as many senses as possible with the aid of strip films, slides, and Kodaslide Signet 500 Projectors. The high comprehension this method assures has excited interest, boosted attendance at sales meetings, and increased sales!



### BOOKLET HELPS YOU DECIDE

This free booklet, "Motion Pictures: Aids in Business and Education," can help you decide how 16mm movies can help you. It discusses applications, planning, production costs, presentation, and effectiveness of business and industrial movies. References and sources of loan films are included. Just mail the coupon.



### HOW TO PICK A PROJECTOR

Salesmen need projectors that keep audience interest alive with crisp, brilliant pictures... and put the audience at ease with clear, comfortable sound. Their projectors must be easy to carry, easy to set up, and easy to run. And salesmen also need reliable projectors so that breakdowns won't spoil presentations miles away from service facilities.

That's why the companies mentioned above—like so many others—have selected Kodascope Pageant Sound Projectors. Pageants are permanently pre-lubricated to eliminate the danger of improper oiling—chief cause of projector breakdowns.

For more details to help you pick your projector, just check the coupon for your free copy of a new catalog on the complete Pageant line.

### EASTMAN KODAK COMPANY

Dept. 8-V, Rochester 4, N. Y.

Please send me without cost or obligation:

- ☐ "Motion Pictures: Aids in Business and Education"
- ☐ New catalog on Kodascope Pageant 16mm Sound Projectors
- ☐ Literature on Kodaslide Signet Projectors

NAME \_\_\_\_\_

POSITION \_\_\_\_\_

COMPANY \_\_\_\_\_

STREET \_\_\_\_\_

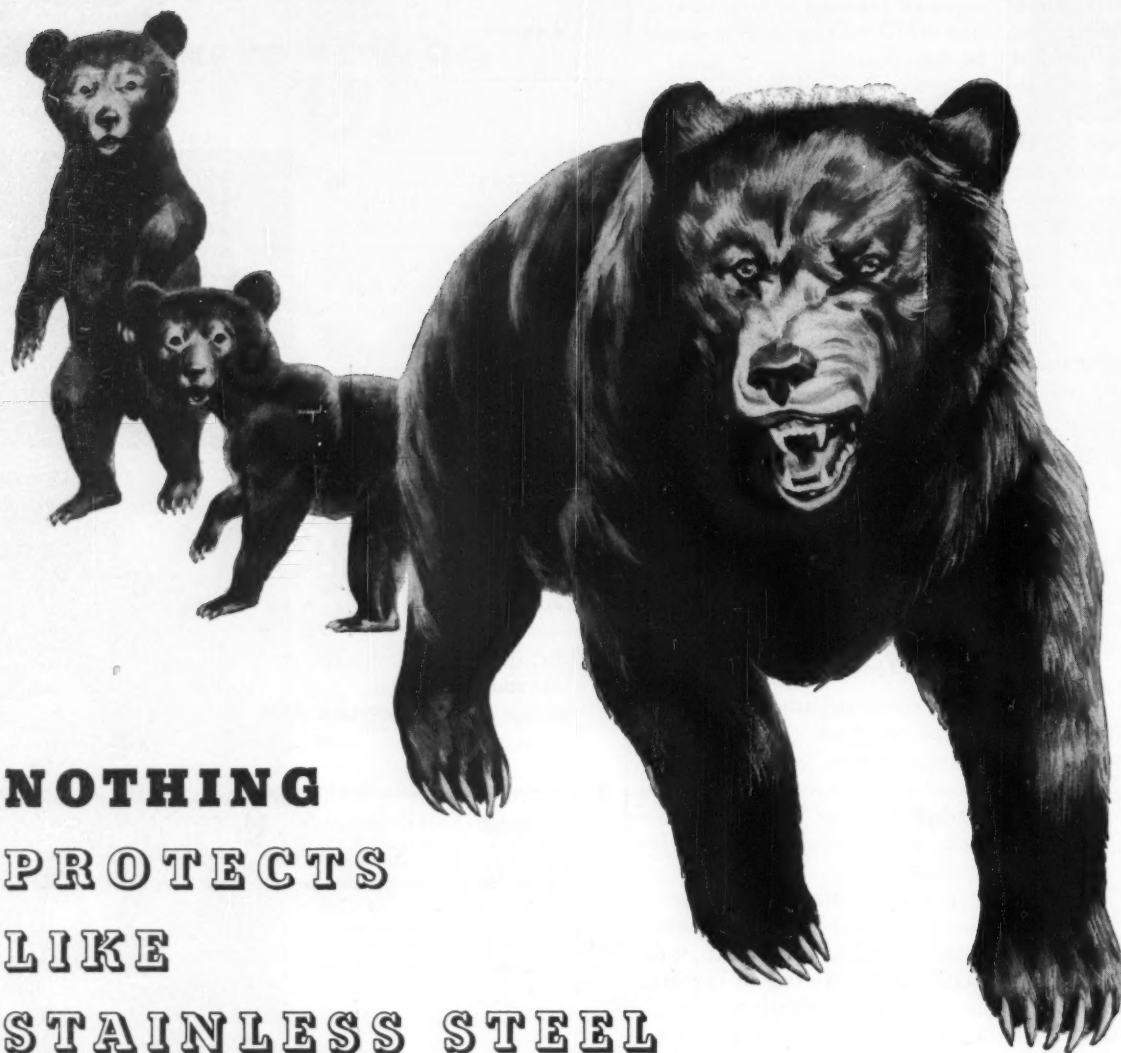
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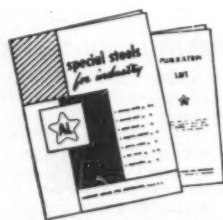
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protect as completely, last as long and cost you as little in the long run.

These qualities in AL Stainless Steel can boost the salespower of a product, or cut the operating costs of equipment—often with little or no increase in first cost. Very likely *you* have problems where these advantages can bring you benefits. Let us work with you. *Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pennsylvania.*

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## New angles for design and production

### Snapping pictures to cut costs

Cameras—big ones, little ones, and special-purpose ones—can save a tremendous amount of time and errors in almost every plant. Yet it's surprising how many companies fail to take advantage of them. Ryan Aeronautical Company certainly doesn't fall in that category, though. As the pictures below show, it has found a way to use the camera in

almost every department from raw stores to final checkout.

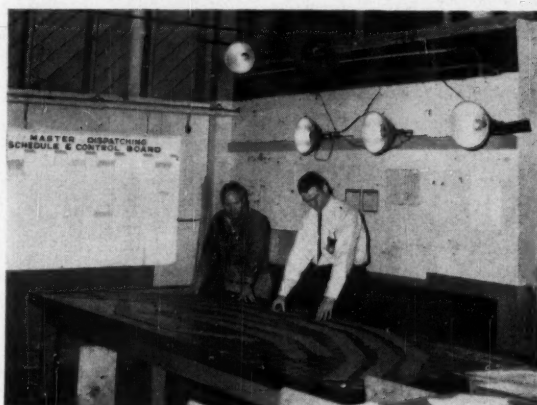
The personnel department has found that showing applicants pictures of actual jobs helps to eliminate many misunderstandings and improper placements.

The engineering department uses its Lanston Monotype (below, right) to transfer blueprints to materials from which parts are to be cut; and also takes advantage of the camera's ability to "shrink" and

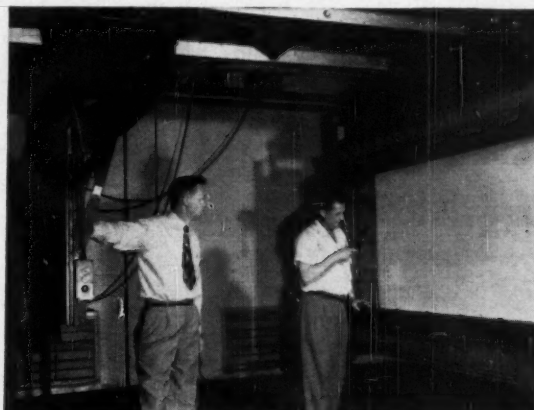
"stretch" drawings in making dies. Engineering drawings are enlarged just enough to compensate for material shrinkage in casting.

Customers benefit, too, from Ryan's use of the camera. First-run parts on each new item are photographed from all angles so the customer can see exactly what is being done, suggest changes if necessary.

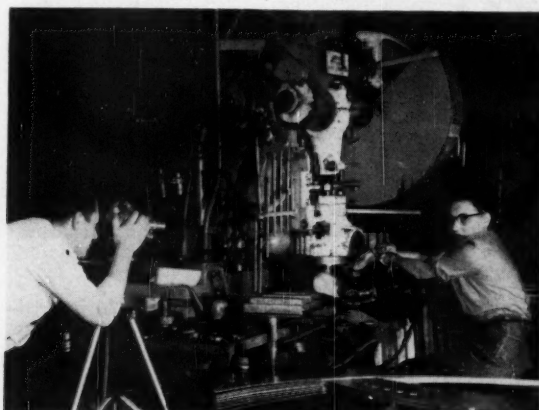
In addition to all these, Ryan uses cameras to provide a permanent record of goods received, pre-



Materials-saving layout of sheet metal parts is arranged on table, recorded by Polaroid camera suspended above. Print is ready in a minute to guide router.



Precision templates are reproduced on wood, metal, and plastic sheeting by huge Lanston-Monotype camera at Ryan. It has many other engineering uses as well.



Safety gets a boost from color motion pictures, taken on the job to show good and bad methods. They're a lot more forceful than lectures and diagrams, Ryan reports.



Research uses cameras in many ways. Here, camera attached to metallograph provides a permanent record of tests, helps spot defective materials, find causes.

## HOW TO HAVE TWO SALESMEN FOR EVERY PROSPECT

### The EXECUTIVE Line



... Makes Contacts When Your  
Salesman Isn't There  
... Helps Him SELL When He Is!

"Many of the declines in business could have been prevented by efficient salesmanship," reports Dun's. ONE proven way to make selling more efficient — to remind both customers and prospects of you and your products every hour of the day — is through an Executive Line Advertising Specialty or Business Gift.

Every Executive Line item STAYS on a desk, or in a pocket, because its recipient is sure to find it extra valuable, extra useful, extra long-lasting. An Executive Line Specialty, with your name, slogan or trademark on it, serves as both a good will ambassador and a tireless "second salesman."

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TAPE MEASURES • LIGHTERS  
NOVEL PAPERWEIGHTS • CALENDARS  
PEN SETS • POCKET KNIVES  
ASH TRAYS AND MANY OTHER ITEMS  
The EXECUTIVE LINE products are available from most good Advertising Specialty firms or mail coupon TODAY attached to your letterhead.

Triple Threat  
Letter Opener  
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Stainless Steel  
Handle — folding  
8" ruler, a mm.  
measure and a  
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a decimal equivalent  
table and reduction  
scale. Sample —  
\$2.50 postpaid

Pocket Slide  
Caliper No. 1045  
Multiple use tool.  
18-8 Stainless Steel.  
Etched calibrations in  
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Genuine leather case.  
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22 Year  
Calendar Bill Clip No. 510  
It's NOT just a Pocket  
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to-operate calendar  
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Send free catalog and prices. I am enclosing  
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THIS COUPON MUST BE ATTACHED TO LETTERHEAD



# American Credit Insurance

## AND

# The Case of the Valued Customer

THIS is a case to illustrate the need for American Credit Insurance, even where prior experience seems to indicate no unusual risk. Whether your own business is larger or smaller than the one cited here, the same principle applies.

The policyholder, a manufacturer doing a gross business in excess of 55 million dollars, was covered to a total of some 700 thousand dollars on a general coverage policy. A very old and valued customer, well rated and generally well regarded, desired a higher limit of credit than that provided by the policy on the basis of credit rating alone. Should the policyholder go along with the customer? Little if any risk seemed to threaten. Still . . .

The policyholder's Credit Manager decided to refer the matter to his American Credit representative. As a result, a rider was issued, increasing the coverage to 150 thousand, and raising the total policy amount to 750 thousand dollars. Somewhat later, against all indications, the account had to be filed as a past due item of more than 196 thousand dollars. Despite all appearances, the old and valued customer was actually in trouble, with the policyholder the largest of a whole group of creditors.

As a free service under the policy, American Credit represented the policyholder in a series of meetings with the debtor and his other creditors, and managed to collect \$70,600. This amount was prorated between the total claim and the actual coverage, and the policyholder also received a loss payment of \$86,400.00, with no service charge for the item collected. Thus, through the considered action of its Credit Executive, the policyholder's loss, by reason of this \$157,000 total recovery, was reduced to a nominal figure, and there was no disastrous reduction of his working capital.

Whether you are selling old and valued customers, or constantly expanding into new markets, you will find new assurance in all your dealings when you know that your accounts receivable are as well protected by insurance as your equipment, your goods in process and your inventory. For your copy of a new booklet: "Credit Insurance, Its History and Functions," write Department 50, First National Bank Building, Baltimore 2, Maryland.

# American Credit

# Indemnity Company

## of New York

pare visual aids for training, and, of course, to illustrate its employee magazine, sales brochures, and technical reports.

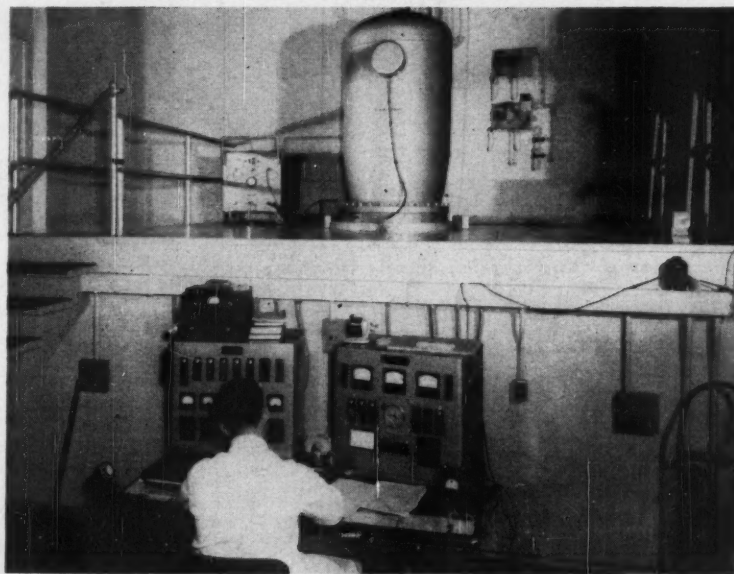
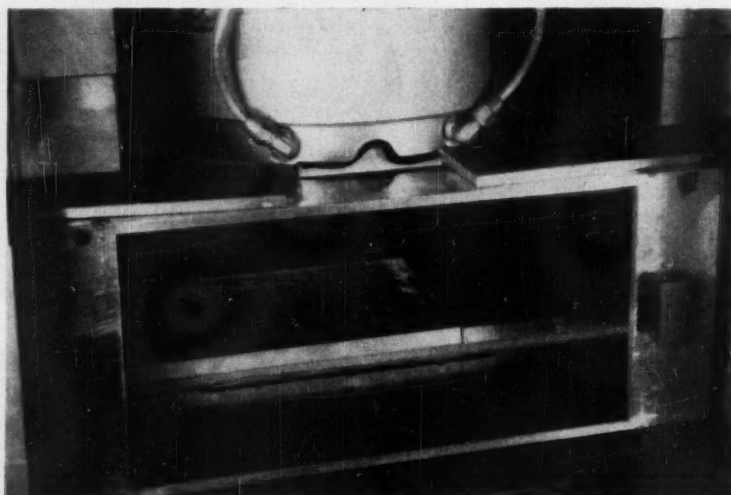
### Facts at your fingertips

An unusually good selection of statistical data books, engineering reference tables, slide calculators, and glossaries has been published in recent months. Listed below are several you'll want to add to your collection. Unless otherwise noted, publications are free on letterhead request to sources indicated.

**Scientific and engineering tables and data.** Over 100 pages of tables, charts, and nomograms covering everything from standard weights and measures and wire gages to air infiltration through windows and properties of plastic textile coatings. United States Testing Company, Hoboken, N.J.

**Chemical Statistics Handbook.** Latest edition of the Manufacturing Chemists' Association's mammoth compendium of facts and figures. Price: \$3. MCA, 1625 Eye Street, Washington 6, D.C.

Continued on page 122



### Electrons on the production line

Ordinarily, the high-powered machine shown here is considered a tool for pure research—and very special research at that. But it's working right on the production line at Upjohn Company, Kalamazoo, Mich. Its job: sterilizing drugs after they're sealed in containers. The machine, a Van de Graaff accelerator made by High Voltage Engineer-

ing Company, releases a high-speed stream of electrons (traveling at 175,000 miles a second) that kills bacteria and other living organisms, yet does not heat the drugs or destroy their potency. The upper photograph shows trays of drugs moving past the electron beam. The lower photograph is an over-all view of the machine and its controls.

**TESTS PROVE it pays to use coatings formulated with BAKELITE resins**



"Ucilon" Protective Coatings based on BAKELITE Vinyl Resins, used on this tank, are produced by United Chromium, Incorporated, New York 17, N. Y.

## **specified . . . because of proven performance**

The case of Tank No. 82 is a typical one. A conventional coating failed. Rather than continue with costly short-lived maintenance, Colgate-Palmolive Company engineers undertook extensive testing of a wide variety of coatings.

Coatings based on BAKELITE Brand Vinyl Resins proved superior in these tests and, consequently, were applied to the tank structure shown in the photograph. That it will be a long time before further maintenance work is

needed has been shown by case histories over and over again.

Coatings based on BAKELITE Resins are tough, durable, and tenacious. They resist acids, alkalis, salt air and water, temperature extremes, and rough service. They provide longer wear on metal and masonry surfaces, and long-term economy that is superior. Our booklet, "BAKELITE Resin Coatings for Industry" shows interesting applications. Write to Dept. GQ-42.



**Vinyl, Phenolic, Epoxy, and Styrene Resins for Coatings**

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The term BAKELITE and the Trefoil Symbol are registered trade-marks of UCC



# ONLY **Faultless** TRIPLE GREASE SEALED CASTERS

Have NEOPRENE VULCANIZED SEAL

**Positive Protection for Swivel and Wheel Bearings wherever steam, dirt, chemicals, water are encountered**



**SERIES 900GS CASTER**  
Cut-away to show grease sealed double ball bearing swivel.

**1**  
LEAK-PROOF NEOPRENE RETAINER MOLDED AND VULCANIZED ON UPPER BEARING SWIVEL RACEWAY. PATENT PENDING.

**2**  
THRUST BEARING GREASE RETAINER TIGHTLY FITTED AROUND FORMED, HARDENED RACEWAY. CAN BE EASILY REMOVED FOR CLEANING OR INSPECTION.

**3**  
NEOPRENE RING PERMANENTLY ATTACHED TO METAL WASHER AND PRESS FITTED INTO HUB.

Here's a Caster so precisely sealed against live steam and sand blast, that pressures up to 80 lb. per sq. in. could not penetrate the raceways. No lubricant dripped out. No sand got in. All of the original grease was intact and would continue to lubricate the bearings indefinitely.

## CUTS MAINTENANCE and MAN-HOURS

Neither water, dirt, chemicals or high temperatures affect the maneuverability of the Series 900GS Caster. A permanent film of grease, between the Neoprene vulcanized seal and top-plate, greatly reduces friction—accelerates swiveling—minimizes "down-time" and plant interruptions. Write today for Bulletin 157-3G, no obligation.

**NEOPRENE HUB SEAL**  
Heavy Neoprene seal is formed around metal washer to lock grease within roller bearing.

Washers with Neoprene are press-fitted into hub. The Neoprene cross section reveals area provided to lock grease against leakage and to assure free running wheel.

**Industrial Engineering Terminology.** Official ASME definitions of terms used in work measurement, wage incentive systems. It's a 50-page manual, covering more than 500 terms. Price: \$1.50. Order Department, American Society of Mechanical Engineers, 29 West 39 Street, New York 18, N.Y.

Also recently published by the ASME: **Glossary of terms in Nuclear Science and Technology**, 189 pages. Price: \$5. (Individual sections, containing terms used in instrumentation, metallurgy, and so on, may be obtained at prices ranging from 60 cents to \$2.50.)

**Steel terms and engineering data.** Designed for users of cold finished steel bars, this 32-page data book defines terms used in alloying, heat treating, machining and testing; also includes hardenability charts, equilibrium diagrams. LaSalle Steel Company, Chicago 80, Ill.

**Industrial oven facts.** Simplified diagrams of oven types, plus tables of specific heats of materials, steam pressures, and heat equivalents are included in this useful 20-page

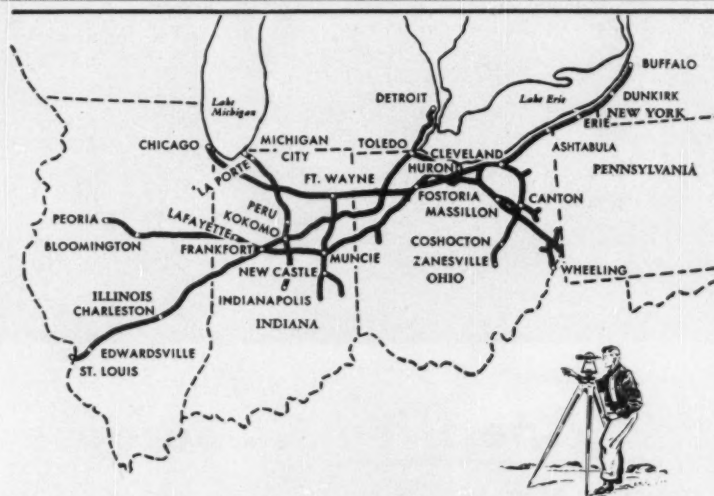
booklet, prepared by Michigan Oven Company, 415 Brainard, Detroit 1, Mich.

**Feed and speed calculator.** Slide chart for selecting the proper carbide cutting tool and figuring horsepower correction factor, includes comparison chart of carbide materials supplied by ten different producers. Willey's Carbide Tool Co., 1340 West Vernor Highway, Detroit 1, Mich.

**Carloading calculator.** Circular dial for selecting block pattern that will best protect cased goods during shipment. Also available: **Freight interchange map of the United States.** Both from Union Pacific Railroad, Omaha 2, Neb.

**Glossary of terms for fluid power.** Eight types of accumulators and more than a dozen different kinds of controls and valves, plus other terms commonly used in connection with hydraulic equipment, are described in this 12-page booklet. Price: 20 cents. National Fluid Power Assn., 1618 Orrington Ave., Evanston, Ill.

Continued on page 124



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## **USKON** Industrial Electric heating blankets:

(Can they help your design or production problem?)

USKON blankets are thin electrical heating units manufactured to standardized sizes.

**THESE BLANKETS CAN BE USED WHEREVER THERE'S A NEED FOR UNIFORM AREA HEATING AT TEMPERATURES OF 200 DEGREES OR LOWER, OVER LARGE AREAS.**

- ★ Fabricators use these USKON Industrial blankets for laminating and forming plastic sheet to plywood or metal foundations for use as counter tops, table tops, wall surfacing, furniture and other products.
- ★ The Refrigeration Industry uses USKON Industrial blankets as an icing preventative and water evaporator (after defrosting) in commercial cooling units.
- ★ The Furniture Industry uses USKON blankets for rapid curing of glue lines and veneering of flush doors, instrument cases, radio and TV cabinets, desks, chair backs, seats and other wooden products of flat or curved construction.
- ★ The uses for USKON blankets seem to be endless. They are used for heating solids and liquids in the following applications:

Pipe heating for chemicals and liquids

Mirror heating to prevent fogging in the home

Heating of traffic mirrors in highway and bridge toll stations

Drying of inks and paints

Heating of oil and similar liquid storage tanks

Helicopter propeller forming

Food warming—counters and containers

Storage battery heating in cold climates

Deck and watch station heating aboard ship

USKON blankets are less than 1/4" thick, weigh only 8 to 16 ounces per square foot. Highly flexible, they conform to simple curves of as little as 1/4" radius. They give electrical heat, so no pipes or ducts are needed. Shockproof—the heating element is hermetically sealed—can be used under wet conditions. Automatic temperature control with external thermostat. Withstands pressures up to 50 pounds psi.

USKON heating blankets may well be the answer to your design or production problem. Send us the details and one of our engineers will analyze them to see if USKON blankets are the economical solution. Write address below.



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## Building on Air

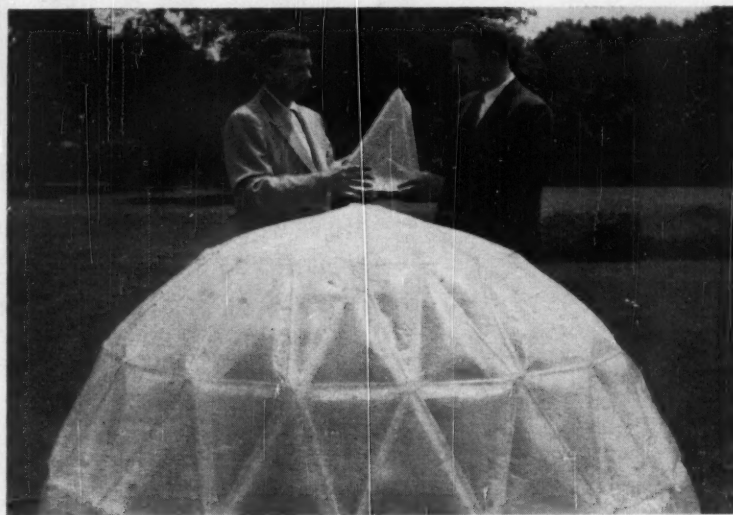
You can set up auxiliary buildings in a few hours, provide better cushioning for a variety of products, and travel faster over rough terrain... if you put air to work in the right way.

Pneumatic cushions are nothing new, of course. The standard tire is itself an air pillow. But air power and air cushioning still offer new solutions to old problems, as the examples here show.

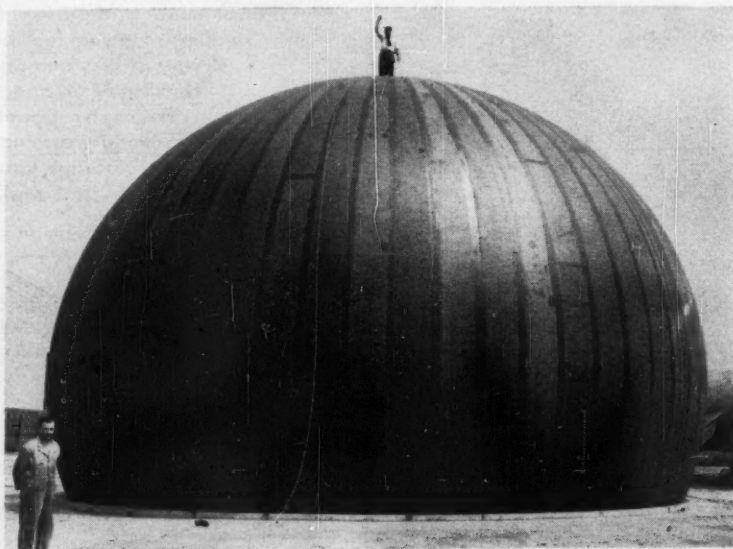
On the opposite page (bottom photograph) is Four Wheel Drive

Auto Company's *Teracruz*, first vehicle specifically designed to use Goodyear's bolster-like *Rolligons*, low pressure pneumatic tire bags.

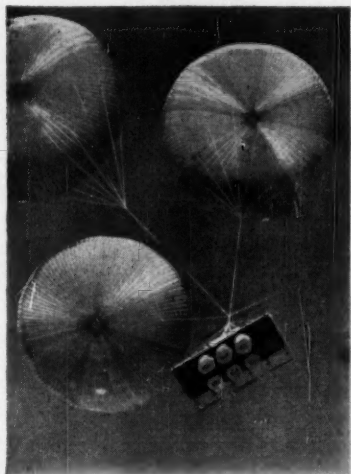
Coming down from the sky (right) is a magnesium pallet equipped with Firestone *Aero-Pallet Cushions*. These barrel-shaped units fill themselves automatically as the load is released from a plane; and then decompress after landing (a cork-like plug pops out on impact and slowly lets the air out.) According to Firestone,



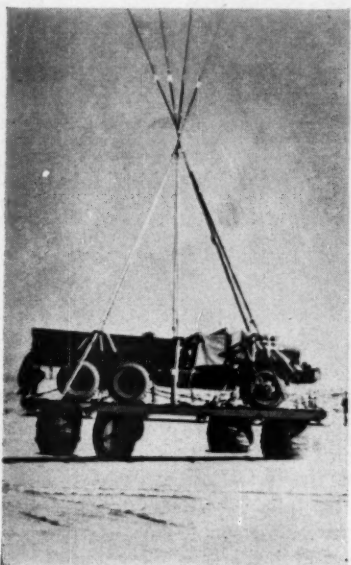
Plastic pillows are new-type building block designed at University of Illinois. Here, inventors show small-scale model. For commercial use, bricks would be about three feet on a side, four inches thick when inflated.



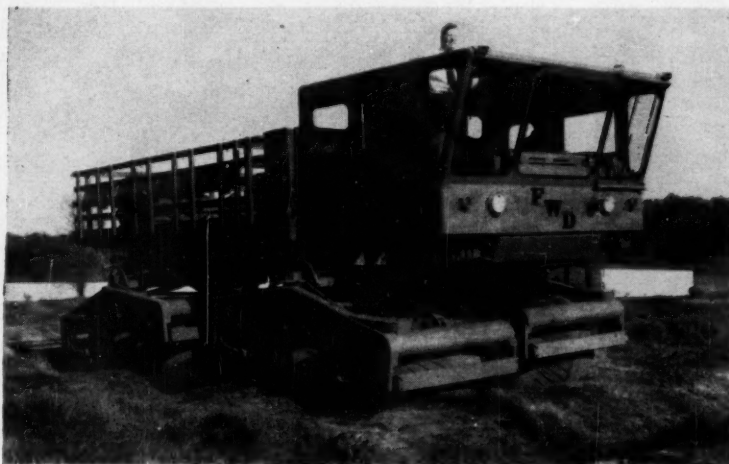
Air-supported domes, developed for the armed forces and now in regular use at military bases, may well find industrial jobs as storage or auxiliary buildings. They are light in weight, need no structural support.



Barrel-shaped air cushions, attached to magnesium pallet, fill themselves, help land heavy loads.



After impact, cushions deflate automatically, let truck sink gently to ground. Firestone makes them.



Cylindrical Rolligon low pressure tire bags, specifically designed by Goodyear for rough terrain, can be inflated or deflated en route, let Tera-cruzer glide smoothly over rocks and ruts though it has no springs.

ten such cushions will support loads up to 25,000 pounds.

Air-supported structures like the radome pictured below have been the subject of a good deal of research in the past few years. Now, Cornell Aeronautical Laboratory reports, they're ready to go to work as roofs for industrial buildings, or as complete storage structures. As Walter W. Bird of CAL points out, air-supported structures offer an atmosphere that can be readily controlled, making it easy to maintain a given humidity or to confine preservative gases.

The "pneumatic bricks" (left), invented by Professor A. C. Richardson of the University of Illinois and Air Force Major G. W. McCauley, are suggested as building blocks for all sorts of structures. If such tough new plastic films as Mylar were used, Richardson and McCauley believe, the material could be extremely thin. Pressure need not exceed two pounds.

What would happen if the air pressure failed on an air-supported structure, or if a pneumatic brick were punctured?

Bird says that the amount of air contained in an air-supported structure is so great in comparison to its weight that it would settle very slowly if the pressure failed. There would be plenty of time to bring in auxiliary equipment.

As to the bricks, while they would be connected for inflation, automatic valves could isolate any damaged units as soon as the pressure started to drop, and the others would hold the structure up until a patch could be applied.

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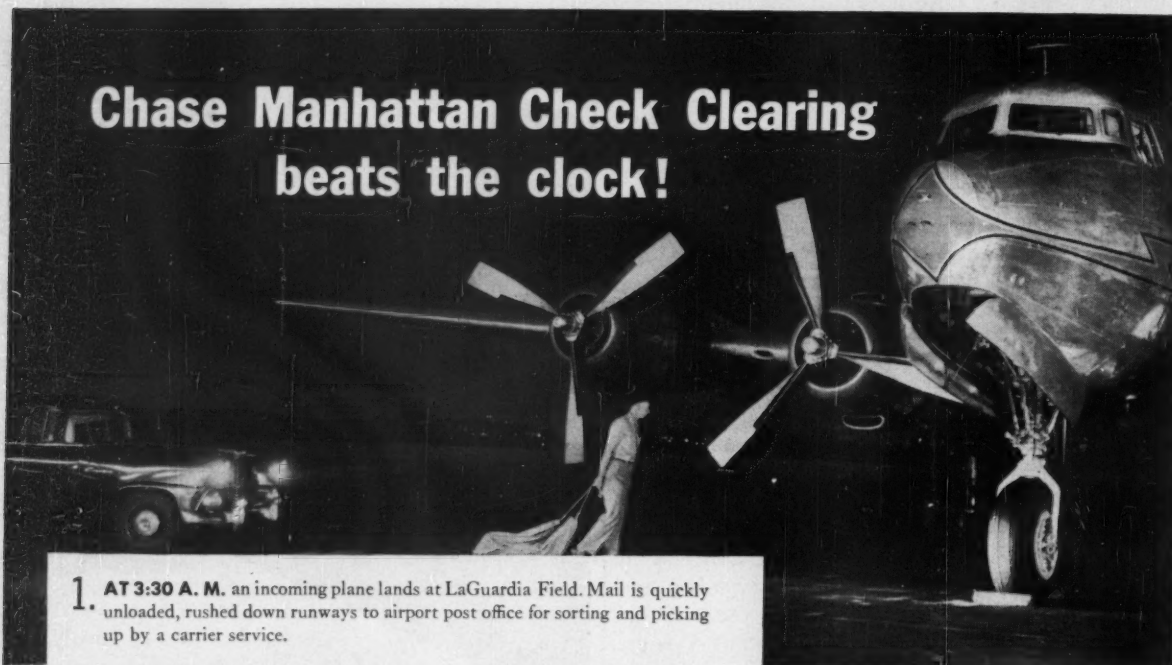
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## Chase Manhattan Check Clearing beats the clock!



1. **AT 3:30 A. M.** an incoming plane lands at LaGuardia Field. Mail is quickly unloaded, rushed down runways to airport post office for sorting and picking up by a carrier service.



2. **BY 4:30** remittance letters are speeding across the Triboro Bridge headed for the New York Clearing House—just around the corner from Chase Manhattan headquarters.



3. **AT 5:20** Chase Manhattan messengers pick up correspondent bank remittance letters at the Clearing House, rush them to Chase Manhattan's waiting nightworkers for processing.



4. **10 MINUTES LATER** agile fingers and high-speed machines are clearing incoming checks. Carefully trained, highly efficient Chase Manhattan people work three shifts around the clock.



5. **JUST AFTER 6:00 A. M.** Chase Manhattan correspondent checks are completely processed and ready to be delivered to member banks at the New York Clearing House or shipped out of town.

**Pictures show fast collection features . . . minute-by-minute movement of incoming remittance letters**

Top-speed check clearing is one of the most important services The Chase Manhattan Bank performs for its correspondents.

As these on-the-spot illustrations of just one of many daily collections show, float time is practically nil.

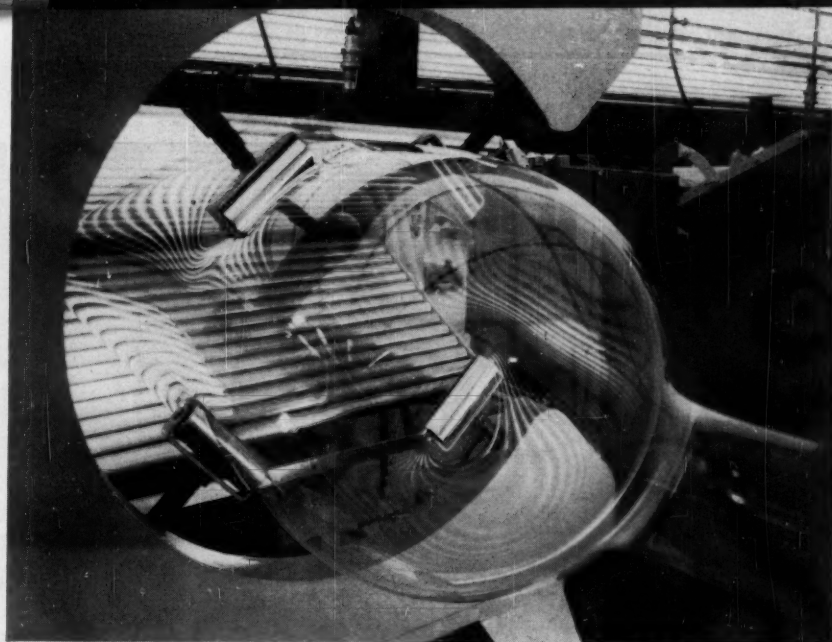
Twenty-four-hour clearing service, backed by experienced personnel working with efficient business machines, makes this fast collection feature possible.

If you are not already acquainted with Chase Manhattan's Check Clearing Service, we invite your inquiry.

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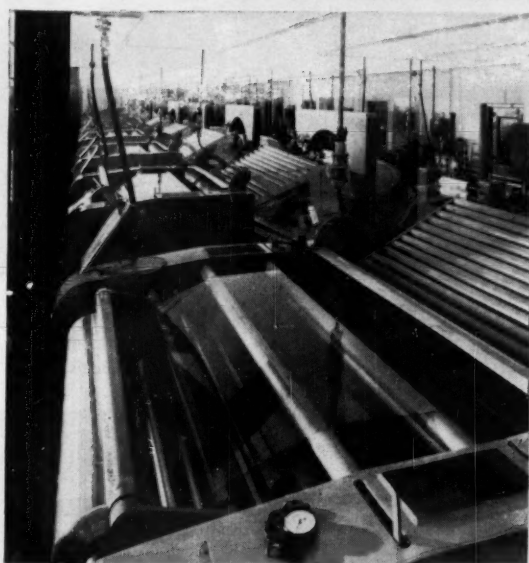
**PHOTO  
VISIT**

Saran powder, fed into extruders, emerges in molten "bubble" form which is stretched by injection of compressed air. The bubble, about 80 inches diameter and one mil thick, is guided by rollers into position for deflation.

## A MODERN PLANT FOR A MODERN PRODUCT

*Efficiency and smooth production are found here,  
providing ideas for adoption by other industries*

JOHN DREXLER



Film is wound into mill type rolls for rewinding and cutting. Thickness gage in foreground is one of the many testing and checking tools in constant use.



Adaptions of equipment common to other industries had to be done. These rewinding and slitting units have their originals in the paper and tape industry.

**I**N Midland, Michigan, The Dow Chemical Company has converted a former magnesium rolling mill into a sparkling new plant for the production of their plastic wrapping film, Saran Wrap. In the three-story structure, Dow has a production capacity of over 5 million rolls per month—will utilize machines and men at top efficiency with up-to-date equipment and maintenance methods.

Cleanliness and safety are taken care of in many ways, starting right at floor level. Magnesium oxychloride is used to provide a safe, sound-absorbent, easy-to-clean floor in all production and shop areas, washrooms, and lunchrooms; cement block and brick dividing walls are finished with a new cement enamel, also easily cleaned; a 70-degree temperature is maintained at all times.

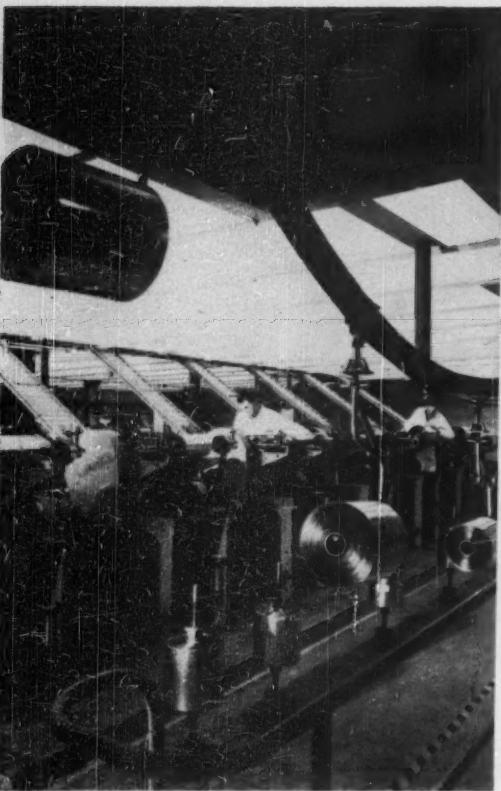
In materials handling (see September, page 75), Midland sets a good example. Conveyors of all types are used wherever possible and manual handling is reduced to a minimum. Power belts, gravity rollers, gravity skate wheels, power rollers, overhead cables, telescopic booms, electric trucks, and elevators—all are utilized.

Efficiency is also the keynote of shipment control. Carrying ample inventory, the plant can process an order the same day it is received through the use of an in-plant teletype system. The equipment produces all paper work in a single operation, also provides cut stencils for use with the labeling devices.

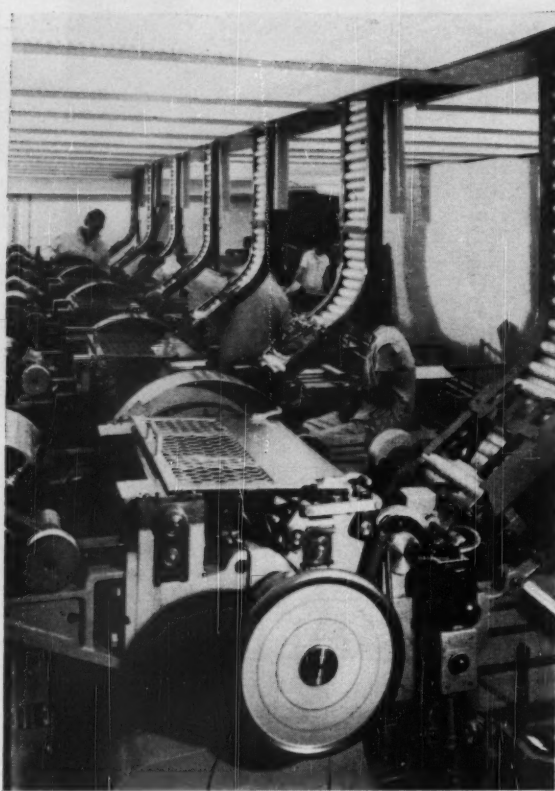
Other modern production advantages are found in the lighting, quality control, refrigeration, dehumidification, warehousing, and processing equipment. Because of the film's characteristics, special machines had to be developed or adapted for the various phases of production. The product had its origin in World War II when, in a thicker, more opaque version, it was used to package precision equipment.

*Turn the page for more photos*

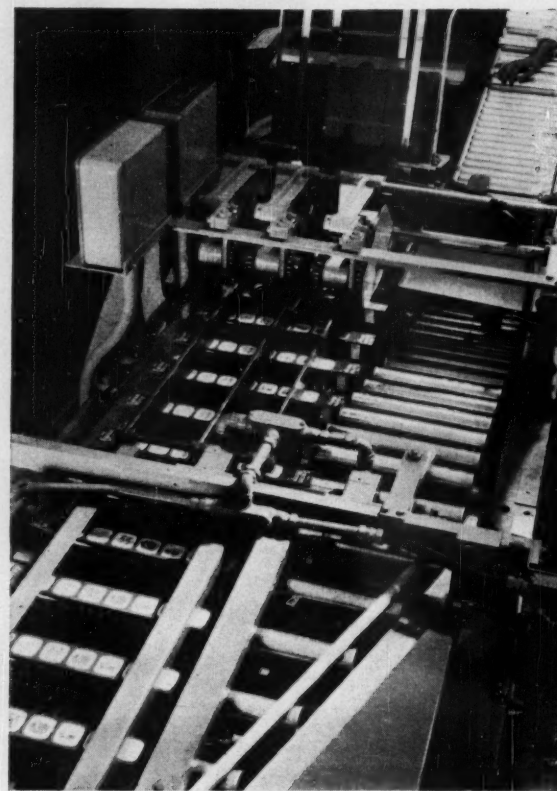




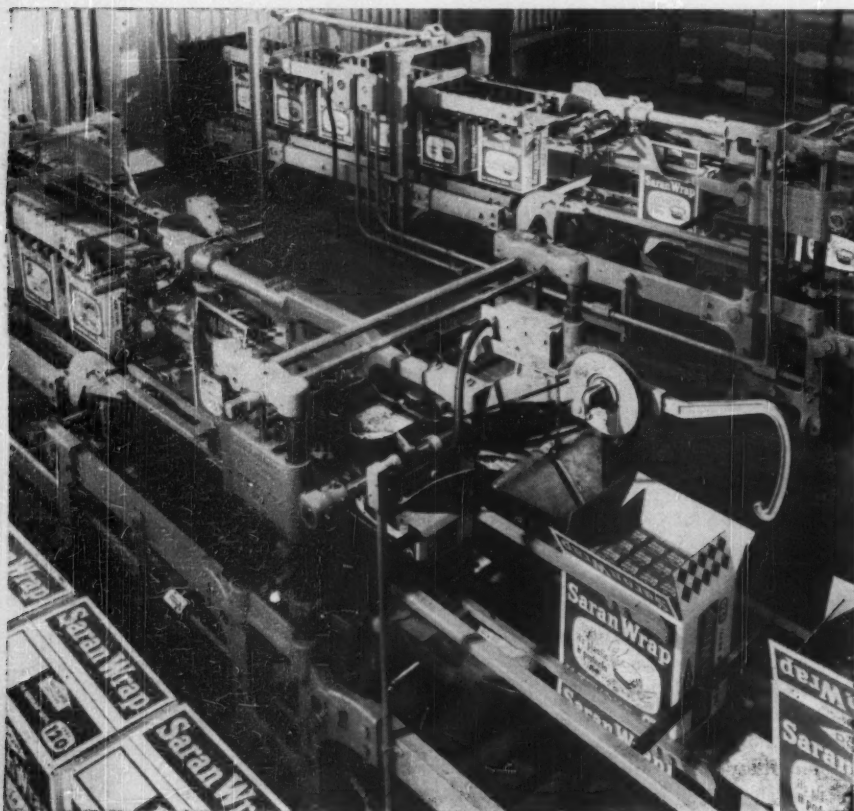
New luminous-type lighting is used wherever film is visible; in production, conversion, and rewinding areas. Overhead cable conveyor is one of many types.



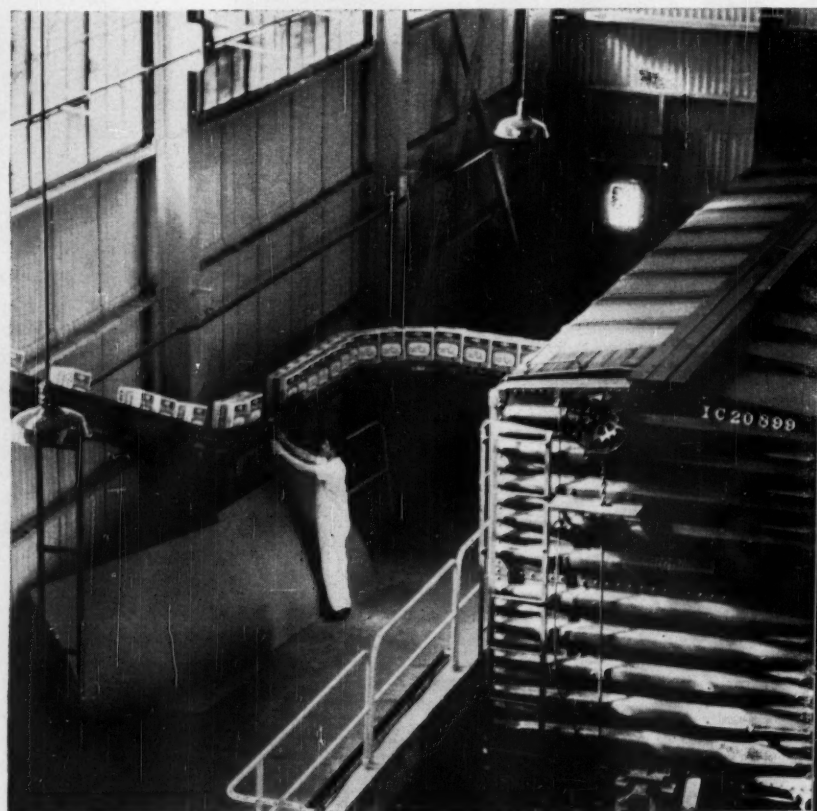
Metal guards provide protection for employees from dangerous moving parts. Here, paper cores are fed from overhead hoppers, film at other side. Machine also embosses leading edge.



Thinness of film and surface charge of static electricity means careful handling in packaging. This machine opens boxes, inserts and positions rolls, and seals ends.



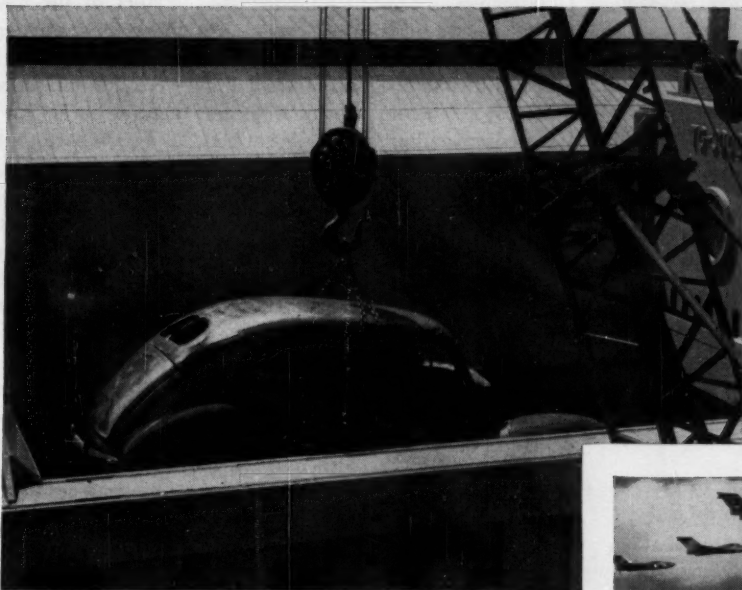
Aisles and machines are kept clear and clean at Midland. Cartons, packed at automatic feed stations, are being glued top and bottom in this picture. From here they will be sent to inventory stock or diverted to proper loading platform.



ROTKIN, P. F. I. PHOTOGRAPH

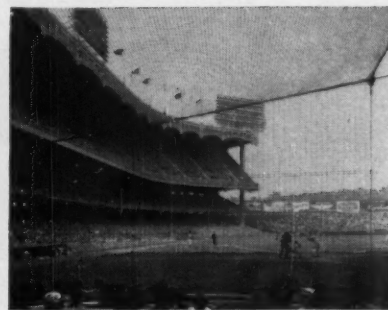
At the end of a 600-foot power belt conveyor, cartons are loaded into freight car. Siding is enclosed, will handle largest size box car. Trailers are loaded at other platforms with aid of telescopic boom allowing operator freedom, fingertip control.

# Only STEEL can do so many jobs so well

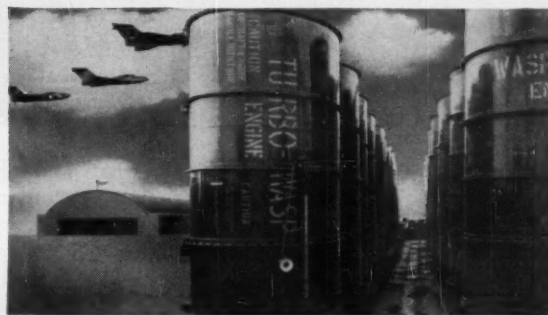


**It Goes In There.** This junkyard baling press gobbles up two cars or one truck at a time, and squeezes them into a tight bale of scrap steel.

**And Comes Out Here.** The cars are now less than a cubic yard of steel scrap. It's the largest such press in the world, and uses 197 tons of USS Steel Plates.



**The Bambino Was Here.** This is Yankee Stadium, home park of the late Babe Ruth, the "King of Swat." The patrons are protected from mishrows and foul balls by a USS Welded Wire Fabric Screen made from thin, strong wire that does not impair the view. USS Tiger Brand Wire Rope holds the fabric up.



**They Pamper Jet Engines.** Military aircraft engines are shipped and stored all over the world in USS Cor-Ten Steel containers. This steel is 50% stronger than ordinary steel, and it has 4 to 6 times the corrosion resistance. The containers are kept under pressure, and the air inside is dehydrated to prevent moisture and corrosion.



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## I Could Kick Myself!

"Yes sir. When I think of the money we could have been saving the past few years, I could kick myself. One day the Detrex man pointed out that metal cleaning and surface preparation accounted for ¼ to ½ of all operations performed in the average metalworking plant. That started the gears in motion, and after checking, I was quite surprised to find that over 25% of our operations were of that type. Sure, I knew that we had some metal cleaning operations here and there in our plant, but I never realized the extent of the overall operation until we actually made a survey.

"As a result, savings that appeared insignificant from an individual basis, became very important from the overall standpoint. It certainly changed my thinking regarding chemicals and equipment for metal cleaning and surface preparation.

"Take for instance degreasing equipment. I asked the Detrex man to look over our metal cleaning

operations to see what could be done to improve our operation and cut costs. The result—we now are using the Detrex Soniclean Process. We always had difficulty getting certain parts really clean because of their shape and contour. Now we clean them by using sound waves. No matter how inaccessible certain spots are, the Soniclean process cleans them thoroughly.

"I suppose I'm not the only man that wasn't too impressed with the importance of metal cleaning from the overall operational standpoint. Perhaps you're like me. Maybe you've never taken a good look at the importance of these operations in your plant. If so, you'll be surprised at the total number of operations involved and the extent to which savings can be realized.

"It isn't going to cost you a thing to let the Detrex man make the same survey in your plant. The results will speak for themselves. You have everything to gain and nothing to lose. Give him a crack at it today."



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EQUIPMENT • PHOSPHATE COATING PROCESSES

## AN OUTLOOK ON MERGERS

*Continued from page 47*

the only forces underlying acquisitions. The report lists such other factors as: (1) inability of smaller companies to command adequate financial resources for expansion and modernization; (2) surplus cash in the hands of acquiring companies; (3) aging owners wanting to retire or adjust their estates; (4) tax savings under provisions of the Internal Revenue Act granting more favorable rates on capital gains, tax free exchanges of stock, and tax advantages from carrying forward past operating losses as credits against future earnings.

Case studies, the report reveals, indicate that when a manufacturer desires to expand his capacity, his first decision must be whether to build or buy. If he builds he creates additional capacity and competition; if he buys he reaps not only the advantage of increasing his capacity but acquires the market previously served by a competitor.

"The analysis," the report says, "of the economic forces discernible in acquisitions . . . indicates that where satisfactory existing facilities are available for purchase at a price even approximating their new construction cost, the balance is strongly weighed in favor of purchase."

Competitive considerations, the report continues, are especially important if a manufacturer is diversifying into new products, supplying new markets with existing products, or supplying existing markets where he sells at a freight rate handicap. They also apply if the proposed expansion is vertical in nature, such as increasing capacity to produce raw materials, supplying the manufacturer with component parts, or expanding his operations to produce and distribute end products.

Listed as examples of acquisitions offering quick economies of scale, diversification, and stability in both production and distribution without competitive struggle were the following:

Consolidated Foods' integration and diversification in the production and wholesale distribution of food products;

Avco Manufacturing Company's addition of a wide variety of household appliances and farm equipment to its previous lines;

Burlington Mills' expansion over the years from a company engaged exclusively in manufacturing rayon textiles to the manufacturing and marketing of yarns and fabrics made of synthetic fibers, cotton, wool, and mixtures of synthetic and natural fibers.

The report said that in discussions with FTC staff members, both acquiring and acquired companies have pointed out that tax savings are a frequent factor in acquisitions. The report then referred to the recent merger of Willys-Overland and Kaiser-Frazer in the automobile field. "Willys-Overland," the report noted, "in becoming the earning asset in the merger, obtained Kaiser-Frazer's past losses for tax credits against its future earnings."

"This is not to imply, of course, that tax incentives have inspired the relatively large number of mergers in the automobile industry," the report continued. "The Nash-Hudson, Kaiser-Willys, and Studebaker-Packard mergers have posed a dilemma for anti-trust



*The* AUTHOR

EDWARD F. HOWREY was confirmed by the Senate as Commissioner of the Federal Trade Commission on March 23, 1953; took office April 1, 1953. Educated at the University of Iowa and George Washington University, he is a member of the law firm, Sanders, Gravelle, Whitlock, and Howrey, of Washington, D.C. His Government service also includes the period 1927-1929 with the Department of Justice in their anti-trust investigation of the motion picture industry.

Mr. Howrey is a member of several state bar associations, the American Bar Association, and the Academy of Political Science.

agencies; namely, is the public interest best served by permitting the independents to merge and thereby to strengthen their competitive positions, or by attempting to force them to continue to compete independently with the three dominant companies at the risk of possible eventual disappearance of at least some of them through total withdrawal or bankruptcy? This dilemma was in fact resolved in favor of permitting them to merge, thereby

increasing the combined companies' ability to compete with the Big Three."

The rest of the report analyzes the 1950 Act, and explores the uses and limits of economic information in determining the probable competitive consequences of acquisitions and mergers.

#### Pertinent Facts

Among the necessary facts to be considered in evaluating probable consequences are: (1) the character of the acquiring and the acquired companies; (2) the character of the markets affected; and (3) changes in the acquiring company and in the adjustment of other companies in these markets.

An acquisition which reduces the opportunity or incentive of sellers or buyers to enter new markets, to experiment with new channels of distribution, or to exercise choice among products and prices, may substantially lessen competition.

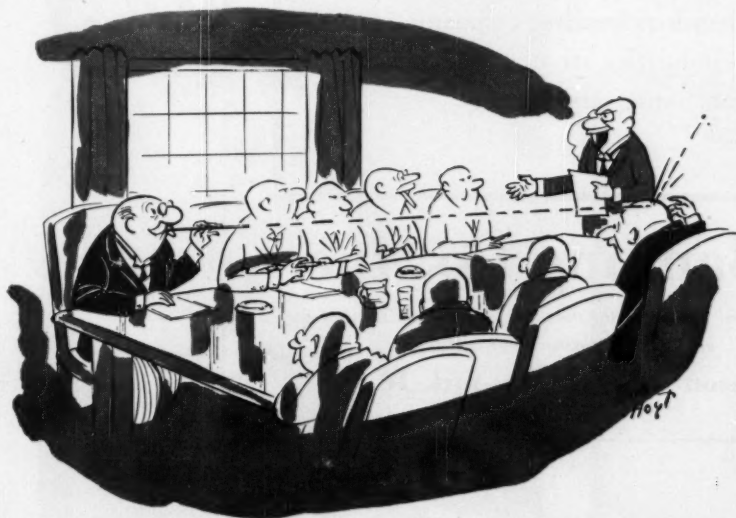
"All of such facts cannot and need not be investigated in each case," the report observes. "Only those facts which are relevant in particular market contexts, and can be obtained at reasonable cost, should become a part of the record. In certain cases the facts that can be obtained at reasonable cost may leave gaps in the information that would be helpful in reaching greater certainty as to the competitive consequences of an acquisition. While sufficient data to support a conclusion is required, sufficient data to provide certainty as to competitive consequences would nullify the words, 'where the effect may be

in the Clayton Act and convert them into 'where the effect is.'"

After pointing out problems involved in the use of market information as legal evidence—including the need to protect third parties from disclosure of confidential information—the report says:

"Although the use of market information in the administration of Section 7 of the Clayton Act raises special problems, refusal to use such information will not solve these problems. Conclusions concerning the competitive consequences of particular acquisitions cannot be reached on the basis of rule-of-thumb, they must be reached on the basis of the market facts relevant for an understanding of such consequences."

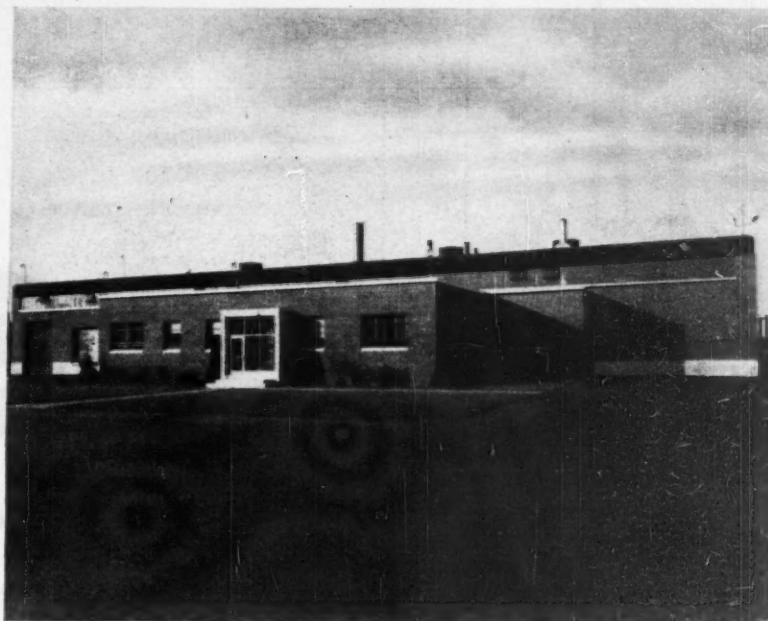
The expansive range of present antimerger activity—Federal Trade Commission complaints, court cases instituted by the Department of Justice, and economic studies—offers business men, respectful of anti-trust prohibitions, some insight to future prospects. Government in 1955 recognizes that responsible regulation lies in a middle ground between indiscriminate condemnation of all mergers and indifference to the real competitive hazards of some mergers. Mergers can only be assessed in competitive context, on a case-by-case basis. Certainly those mergers which transgress anti-trust boundaries will be vigorously challenged. But dynamic enterprise, operating within lawful limits, remains America's great strength. There is no occasion yet to fear irresponsible governmental harassment.



"All right, Dillingham, I'll take the peasbooter."

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## WHAT'S LABOR'S NEXT DEMAND?

*Plant-Wide Pensions First, Then Guaranteed Wages—*

*Next the Shorter Week*

WHEN organized labor won its demand for industry-paid pension programs a few years ago in negotiation with the top steel and auto companies, this management concession began to filter down to employees of smaller companies gradually, but steadily. As for the guaranteed-wage or supplemental—unemployment-pay demands—granted by large automotive concerns and a few other companies—it is not certain yet that the "pattern" will be adopted in all industries or in all contracts. Some managements have already found offers that the unions prefer to the promise of greater unemployment compensation some day in the future.

But already, among the men who have to negotiate for large corpora-

tions, the question is seriously discussed, "What will be the unions' next serious demand?"

The consensus is that it will be the shorter work-week—at the same pay as is now paid for a 40-hour week. One man, whose job is keeping local managements informed on what bargaining is being done on a national, company-wide basis, and what demands seem likely to be raised in the near future, had this to say last month:

"They (the United Steel Workers—CIO, in this case) sort of grinned when they mentioned the 30-hour week this year. But I think they will press for it seriously in 1956."

Challenged on this point of view, he set 1944 as the year when the Steel Workers "seriously" put forth

a demand for supplemental unemployed pay or, as they called it then, the guaranteed annual wage. This was the year the union asked the Federal Government to order the guaranteed wage. It was eleven years before the United Automobile Workers won a concession from the leading auto manufacturers. This management negotiator said he expects it will take less time for the union to advance from projecting the shorter work week from a bargaining suggestion to a hard bargaining demand.

His personal expectation was that employers who can absorb the terrific differential in hourly pay—because they can save by operating machinery 24 hours a day—will concede, when the demand becomes the union's No. 1 bargaining point.

### *Picking up an Easy \$225*



By substituting a humble toothpick for a screwdriver in adjusting small electrical coils used in radar equipment, Fred Olney (left) eliminated breakage, won a \$225 suggestion system award, and pushed the total of General Electric Company's awards to employees past \$6 million. At right, he's with E. S. Willis, employee benefit consultant at G-E's electronics plant at Utica, N. Y.



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and construction—*

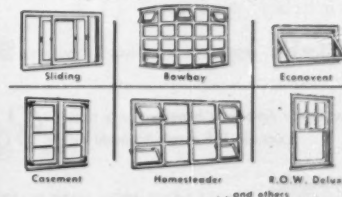


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That's a lot of hay, no matter how you bale it. Yet New Holland's new "Super 77" power take-off baler for 3-plow tractors is as easy to operate as any engine powered baler.

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Rugged, efficient Warner Automotive gear-box assemblies, individually designed, fit a wide variety of agricultural needs—in combines, corn pickers, rotary cutters, post hole diggers, spreaders.

Behind these—and all Borg-Warner products—you'll always find B-W engineering at your service in typical "design it better—make it better" tradition.

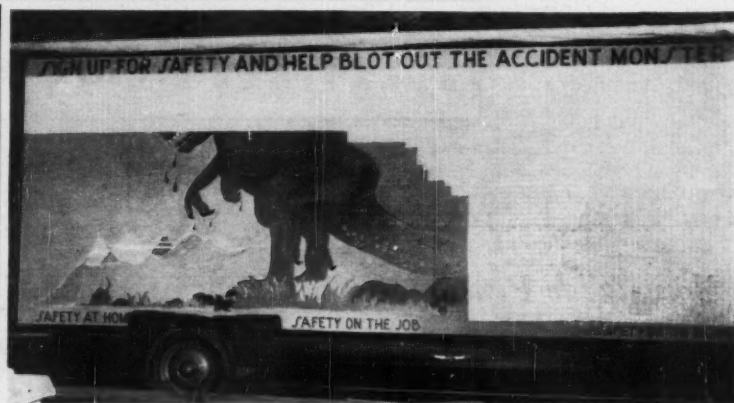
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WAUSAU MFG. CO. • WESTON HYDRAULICS, LTD.



### *Accident Monster Dramatizes Safety Program*

Power of co-operative effort to a single goal was demonstrated for 7,500 employees of Jersey Central Railroad when the two-inch-square stubs of safety pledges they were asked to sign blotted out a billboard-size "Accident Monster"

(above) which was moved from point to point on the lines. At various stops, darts were thrown at board and men whose stubs were hit won pair of safety shoes. At trip's end, 30 darts picked winners of \$25 defense bonds.

Others, he thinks, will follow, in ragged fashion if and when they can—always assuming that the economic situation remains good.

One problem that only time will give the solution to is that the unions' desire for the shorter work-week will increase as the economy droops and jobs become scarce; industry's willingness to give in and grant equal pay for shorter hours will harden with a slump, increase only in a continuing good market.

In any case, it may be well for management now to canvass the effects of such short-time proposals in order to be able to meet them adequately, as it was not prepared to meet the pension demand but was, to a considerable degree, able to counter on guaranteed wages.

### *Six NAMH Newsletters Ease Way to Retirement*

An upsurge of retirement programs, most of them setting compulsory retirement at age 65, has confronted industrial management with a complex problem:

1. Many men and women are well able to work effectively past that age.

2. Many resent and fight against compulsory retirement, in the case of hourly-paid employees, through their unions.

3. Even where no such problems present themselves, there is sometimes a difficult human problem in putting out to pasture people who are not prepared for the sharp

change in their manner of living.

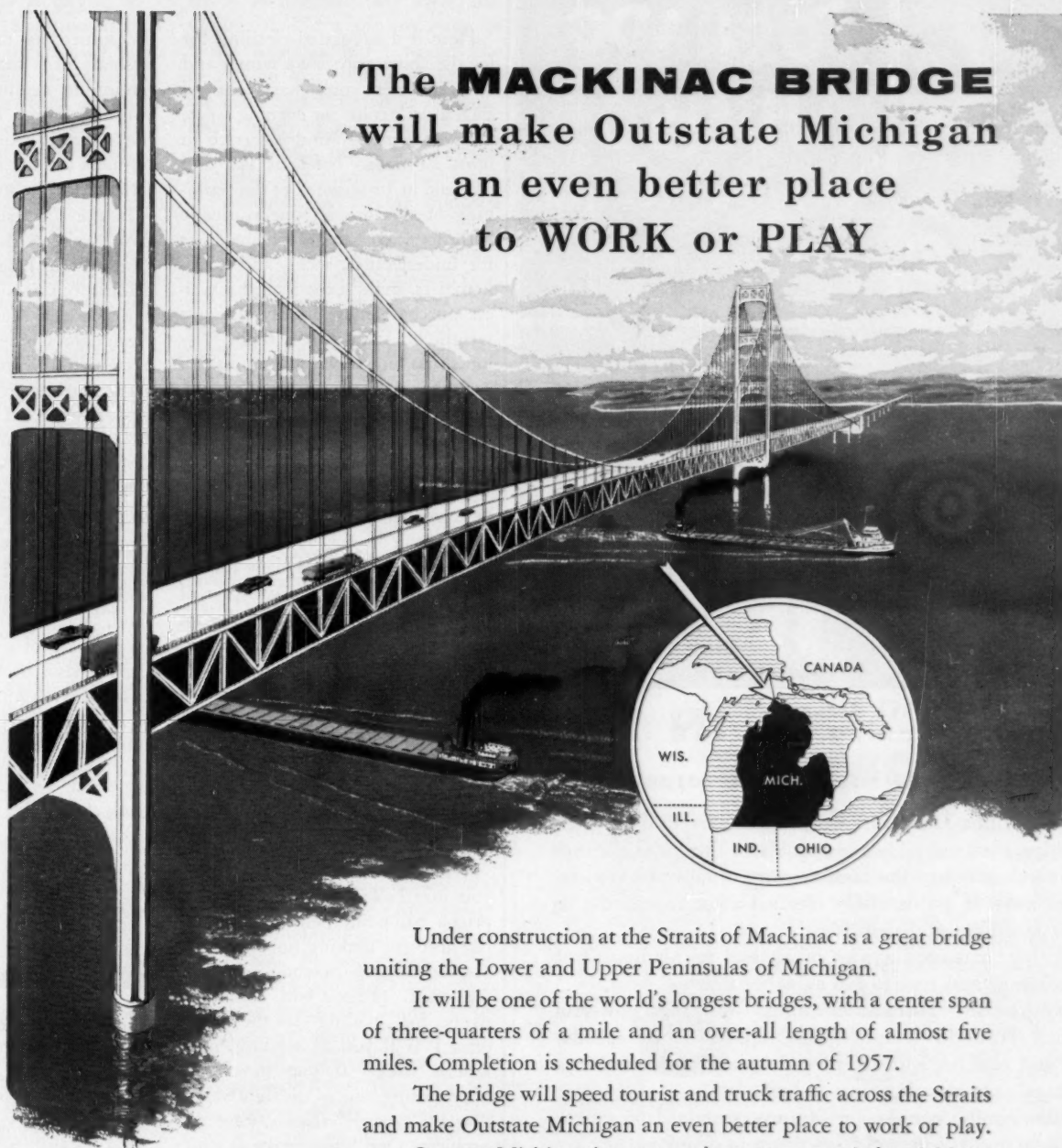
The first problem can only be met by adopting some form of flexible retirement requirements, if the company considers such action to be to its benefit. But the remaining two problems can be met, to a considerable extent, by long-range planning and preparation of middle-aged employees for the situation that will face them fifteen to twenty years hence.

To aid industry in this respect, the National Association for Mental Health, 1790 Broadway, New York 19, N. Y., has prepared six newsletters, "Notes For After Fifty," which give timely suggestions to the middle-aged employee as to how to prepare himself for happy and successful retirement.

### *In Brief*

• An up-to-date bibliography on the Guaranteed Annual Wage and its variations is available from the Business Information Bureau of the Cleveland Public Library, Cleveland, Ohio, 20 cents. Address Rose L. Vormelker, Head, Business Information Bureau.

• Business men who know only what the daily papers have said about the Ford supplemental unemployment compensation plan will find useful "An Analysis of the Ford Type Plan," published by the National Association of Manufacturers, 2 East 48th Street, New York 17, N. Y. 25 cents



The **MACKINAC BRIDGE**  
will make Outstate Michigan  
an even better place  
to **WORK** or **PLAY**

Under construction at the Straits of Mackinac is a great bridge uniting the Lower and Upper Peninsulas of Michigan.

It will be one of the world's longest bridges, with a center span of three-quarters of a mile and an over-all length of almost five miles. Completion is scheduled for the autumn of 1957.

The bridge will speed tourist and truck traffic across the Straits and make Outstate Michigan an even better place to work or play.

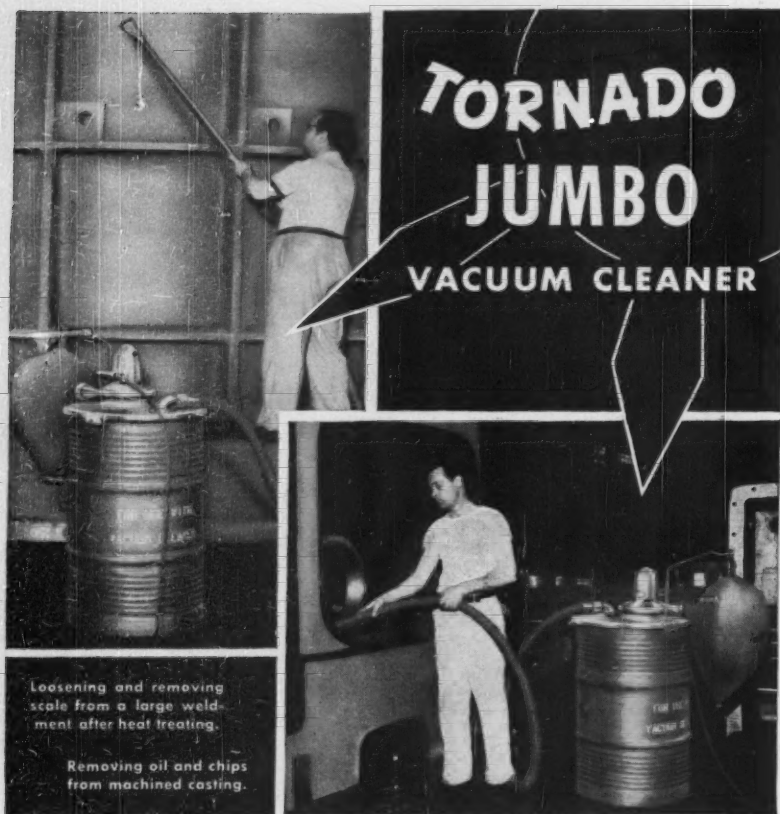
Outstate Michigan has many advantages as an industrial location . . . skilled manpower, central location, unequalled supply of fresh water, a favorable climate. It's the place to build your new manufacturing plant.



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JUMBO  
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Removing oil and chips from machined casting.

**cuts production cleaning time IN HALF**

**at BALDWIN-LIMA-HAMILTON corporation**

At the Baldwin-Lima-Hamilton Corp. plant in Philadelphia, cleaning of chips, rust and oil is a big problem. The large castings and weldments they use in the manufacture of locomotives and diesel engines have to be carefully cleaned after machining to assure proper assembly and painting.

Previously they had used a wire brush and an air hose, but this caused cuttings and rust to fall on other finished work.

Then they installed "Tornado cleaning." With the powerful suction of their Tornado "Jumbo" (325 m.p.h. suction speeds) all oil, chips and rust are quickly picked up and deposited in a 55 gallon drum—cuts cleaning time in half.

The Tornado Jumbo conversion fits any standard 55 gallon drum and can be quickly moved from drum to drum as they are filled.

Tornado supplies a complete line of industrial cleaning equipment for every need. Write for an "in your plant" demonstration.

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**BREUER ELECTRIC MFG. CO.**

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## PLEASURE, PROFITS, AND PASSPORTS

*Continued from page 49*

Here is a suggested clothing list for the above trip: Two winter and two summer suits—have one of each a dark color for evening wear; a dozen shirts—laundry service in most European hotels is fast and efficient, as I suggested at the beginning of this article; one washable bathrobe, two pairs of pajamas. As for underclothes, socks, and handkerchiefs, many experienced travelers purchase these locally—to save weight on the overseas flight. Nylon shirts and shorts are a personal preference. They will help considerably in cutting down your baggage weight.

But you are not a tourist. You will be working all day. You will be entertained very often in the evenings. You may not want to be bothered with the mundane task of washing clothes! Take two pair of shoes—one pair, the sturdy brogue type for walking—and the other, black, for evening wear. You probably will not need a tuxedo for European travel. It is sometimes advisable to have one for the Latin American run, particularly if you are travelling for any length of time. Entertainment tends to be very formal south of the border.

What business accessories will you need? Try six or seven low-priced ball-point pens. If you feel the need for making notes, a pocket-sized ringed notebook will do the trick. (Pages will come out easily for mailing to the home office.) Will you be sending many reports back? If you have poor handwriting, one of the lightweight portable typewriters may solve this problem. One Swiss make is quite compact, sturdy, and weighs only seven or eight pounds.

You may run into trouble if you carry your own portable dictating equipment. It probably will not work on European electric current. As a matter of fact, some of the popular U. S. makes can be rented from local distributors.

I don't know why, but a pair of small scissors can be very useful, as well as a pocket stapler.

A small but important point. What about business cards? Take plenty of them. But if you run out, local printers will do an adequate job. It will help in Latin America, if you have engraved cards. Latins

are sometimes influenced in their estimate of a manufacturer by attention to details such as this. If your firm was "founded in 1877," make sure it is on the card. A long business life carries weight both in Latin America and Europe.

In the Far East, it will help to have your cards printed in both Chinese and Japanese. Many of the leading business men in Siam, the Philippines, Malaya, and Hong Kong are Chinese—and they will appreciate this extra little touch. In Japan, no matter whom you meet, you are expected to exchange cards. In this way, you can use up 50 to 100 cards in a week.

Try not to travel on a business visa if you can possibly avoid it. Your passport will be your entry to most of the European countries with the exception of Turkey, Finland, and Iceland. But in many other areas of the world you will need a visa. In some countries the customs authorities will pay much closer attention to you than they will to a tourist. In other countries you will only be allowed to stay



*The* AUTHOR

RICHARD G. LURIE, editor of *American Exporter*, travels abroad frequently to interview the readers of his magazine. He has visited the Far East, South America, and Europe, studying foreign trade conditions in these markets.

A Harvard graduate (1941) and an alumnus of the Graduate School of Business, as well, he served with the Air Corps and OSS during World War II, doing some work with Siamese guerrillas behind the Japanese lines.

Mr. Lurie is past president of the World Trade Writers Association of New York and a member of the National Conference of Business Paper Editors and the National Press Club.

for a specified length of time. In one new Far East republic it will take from six months to a year to process a business visa.

What about money? You can travel with either a letter of credit or travelers' checks. If you take travelers' checks keep most of them in small denominations, tens, twenties, and then a few fifties, and hundreds. You will not want to be stuck with currency that cannot be exchanged elsewhere. The Iceland

kronur is only good in Iceland; no other country will exchange it for its own currency. It might be a good idea to take some dollar bills with you. If you are running short of foreign exchange, a dollar bill will be good anywhere, and you won't have to cash another travelers' check at the last moment.

### Photo Needs

If you are leaving for the Far East and Africa be sure to pack some extra passport photographs in your suitcase. Some countries will require you to register with the local police on entering and leaving the country. Sometimes photographs are needed for the forms. This is true of Siam and India. Also these photographs will come in handy if your itinerary is changed and you want to visit some country for which you do not have a visa.

What about languages? You will find English spoken by most business men abroad. If they do not speak English someone in their organization will. Surprisingly enough however, many prominent Latin American business men do not speak English, and if they do speak it they would prefer not to.

Actually, showing an interest in the language will help break down any barriers of reserve. Many *latinos* do not care how much you "murder" Spanish, as long as you show an effort to talk to them in their own language.

Even in a country where you would not expect to speak the language, such as Japan, imagine the hit you will make with the local business men if you learn a few of the simple every-day phrases in common use.

Know your countries—at least try to find out something about them before you arrive. You can do this with very little trouble. Pick up some pocket-sized guide books before you leave the States, and study them during your plane trips. Try to find out something about local politics; who are the national heroes, and so forth. Try to learn some of the popular native dishes so that you will at least be familiar with them.

One of the prominent sales representatives in Bogota, Colombia handling many American lines, Guillermo Quintero, has this story to tell: He received a letter from one of his principals in the States—

from an export manager whom he had never met personally. The letter is as follows: "My Dear Mr. Quintero: I am on my way to South America and I would like to call on you, but unfortunately the boat does not stop at Bogota." Here is an example of not only poor planning, but of a poor atlas as well. This man did not know that Bogota is several hundred miles inland.

These then are some of the things that will help you in planning your trip. They will help to make the business side of your trip run smoothly. And then you will have more leisure time to spend with your business friends. You will be doing things that no tourist ever will do. You will be visiting the homes of these people. You will be spending your weekends with them. They will show you the sights. They will take you to their favorite restaurants, not to tourist traps. You will be seeing how people actually live—something that is denied the average tourist.

So when you are in India you may be dining at Calcutta's famed Three Hundred Club, where you can order breast of pheasant and no one will turn a hair. In Bombay you will be sipping a cool drink on the veranda of the Cricket Club. Or you will be visiting summer homes on the Princes Islands near Istanbul, or on the Archipelago near Stockholm.

You will be picnicking in the wild country-side of Iceland where the trout practically come out of the lakes and sit in your lap.

You will enjoy all these things providing that you plan your trip well, and above all, schedule your time.

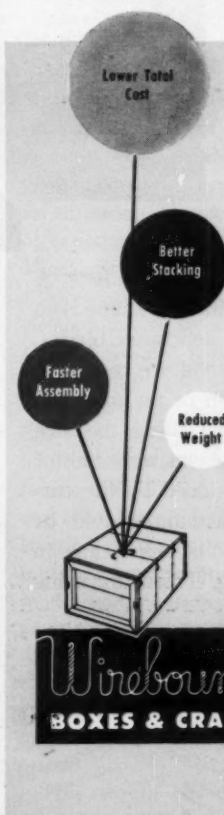
THE END



"... with a vicious snarl, Gibney's faithful dog, Major, sprang at the robber..."



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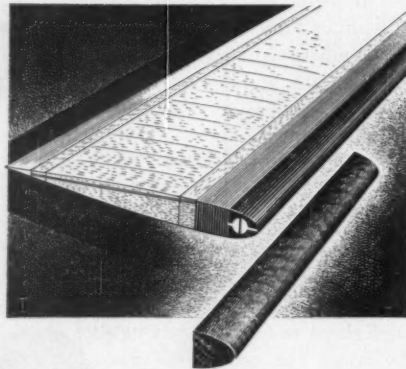
## BUSINESS IN MOTION

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### *To our Colleagues in American Business ..*

When close dimensional tolerances are required in an extruded shape, plus heightened tensile strength, and a fine finish, the shape is drawn through a die after extrusion. If there are special requirements as to straightness, the shape may also be straightened, as necessary, either by hand or by machine. These processes are expensive, but they produce a product that is accurately pre-formed, so that machining is markedly reduced, so much so as to effect remarkable savings. However, there is another way to take advantage of the economy of extruded shapes. Sometimes a "plain extruded" shape will do, thus saving the time and expense of drawing and straightening.

It all depends on what is really needed. Revere had an outstanding example of this recently. A rush order was received, and we could not meet the requested delivery date because of the time required to make new extrusion dies. On being told this, the purchasing agent visited our mill to see what could be done. A mutual study of the facts showed that the shape is to be applied to the leading edges of helicopter blades, and that both the shape and the wood are routed to make a close fit for the application of an adhesive. The shape is also tapered. Several things became evident. First, the original specifications were tighter than required. Second, shapes produced by the customer's original die, in our possession, would be slightly oversize, but not enough to be significant, in view of the subsequent machining. Third, by using



that original die, and eliminating drawing, we could fill the order on time — and save the customer six cents a pound as well.

Now that we both knew that some of the dimensional and physical tolerances were not absolutely necessary, Revere was able to go ahead. The die was put in one of our extrusion presses, the metal forced through it, cut off to exact lengths, and shipped. This made it possible for the customer to complete his first blade on the day specified in his contract. We all worked fast, but no matter how quickly we labored, we could not possibly have met the essential delivery date on the basis of the original specifications. Close collaboration on what we call Quality Control provided the solution. Incidentally, brass was chosen for the part, because of its density, its resistance to corrosion, and the ease with which it can be machined.

Both our customer and ourselves are proud of the accomplishment reported here. It was made possible only by a thorough examination by both of us of the entire background of the order, the fabrication methods and end use, plus what the mill could do if it did not have to make new dies. We would like to suggest that when, as sometimes happens, a supplier cannot meet a date on a special order, you sit down with him and examine specifications to see if they really need to be so tight. You may find that a more or less run-of-the-mill product will do, thereby saving much time and money too.

#### **REVERE COPPER AND BRASS INCORPORATED**

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# Films for Management

Here are short reviews of new motion pictures

made for, by, or about business and industry.

THOMAS KENNY

WITH the return of Fall, management men across the nation in small companies and large are trooping into darkened rooms to watch, approve and sometimes send back for revision new business films. Increasingly films are being thought of not as one-shot affairs but as part of a long-range program, for public relations, employee training, sales promotion, executive development, or many other purposes.

The new films are as varied as the imaginations of the management men who conceived them. Continental Can is readying a film on neighborhood improvement, the Dow Chemical Company has just come up with a hard-selling film on the advantages of soft water, and General Electric is busy with an important motion picture on automation.

## Reel Briefs

**What's It To You?** (20 minutes, color) is the first motion picture to tell the story of the new Mylar polyester film, produced by Du Pont. Intended primarily for executives and technical personnel in manufacturing, this picture demonstrates the properties and suggested uses of the new transparent film.

Among the marvels shown in this picture:



Getting the Jump on Acrobats

- An acrobat jumps onto a suspended sheet of Mylar and it tosses him back into the air.

- Acids dissolve jewelry in a Mylar bag without damaging the bag.

- Neither hot steam nor a temperature of 80 degrees below zero changes its properties.

Many manufactured forms—from a sheet one four-thousandths of an inch to a semi-rigid thickness—are shown along with the uses in insulation, textiles, furniture, packaging, and other areas of industry. It can be borrowed free from the Du Pont Company, 6529 Nemours Building, Wilmington, Del.

**The Search—Automation** (Massachusetts Institute of Technology) (27 minutes, b&w) provides an opportunity for you to visit the Automatic Control Research Center at MIT and to inspect some of the work of Dr. Norbert Wiener and others. Some of the principles of automation machines are demonstrated with mechanical animals such as Felix the Moth (see cut) and metal mice in a maze. The principle of feedback, which is essential to automation, is deftly described. The experimental work of linking a digital computer and a milling machine is demonstrated in detail.

It provides a tour of some automated installations in factories where machines are replacing drudgery rather than people, as they operate faster than thought. The film closes with a discussion by Dr. Killian, president of MIT, about the problem of technological unemployment. This is certainly one of the most valuable additions to the growing library of films on automation. Available from Young America Films, 18 East 41st Street, New York 17, N. Y., for \$6 rental.

This film, which is complete in itself, is part of the prize-winning



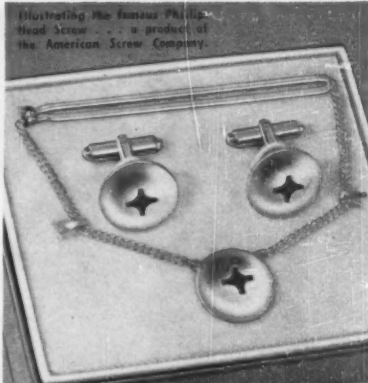
Of Mice and Moths

television series entitled, *The Search*, which demonstrates research being carried on in leading university laboratories. It was first telecast on CBS several months ago and has now been released in 16mm. form. Others in the same series consider uranium prospecting, noise and health, automobile safety, and other topics of interest to business men.

**You and Your Money** (12 minutes, color) is a new addition to the stock of films available on economic education. This exercise in economics education is a simplified version of another film, *Your Money's Worth*, (reviewed in the November 1953 issue, page 170) which was also produced by the Richmond Federal Reserve Bank.

This animated cartoon follows the adventures of Bill Greenstuff, just a common every-day dollar, as he moves through the economy, affecting production, consumption, and other essentials. It describes the creation of prices in terms of the traditional supply and demand and money volume theories. In the process it casts light on the influence of the central banking system on the money supply and emphasizes that an increase in productivity is the primary bulwark against rising prices.

This would be worthwhile for lunch-hour showings and employee education programs, considering the popularity of the subject matter of the film—money. It can be bor-



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I & R's fine jewelry products with your trade mark or design idea, are always selling your products and radiating good will.

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AHEAD OF THE PROCESSION in design—with its Take-up Jaw—balanced, easy-gripping action—HANSEN has proved to be "the modern way to do all kinds of tacking and fastening operations."

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- LIDS ON CIGAR BOXES
- GIMP BINDINGS ON CHAIRS
- COVERING FOOTSTOOLS
- COVERING CHAIR SEATS
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- ASSEMBLING WOODEN NOVELTIES
- TAPE ON VENETIAN BLINDS

**36 MODELS—80 STAPLE SIZES**  
FROM thirty-six models, choose the one best suiting your needs. And select the right staple—whether single-leg, double-leg, narrow-crown, etc. Adaptable—useful—Hansen is a much-needed and helpful tool.

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rowed free from any of the twelve Federal Reserve Banks.

**To Enrich Mankind** (25 minutes, color) attempts to convince the public of the importance of mechanical engineering and to serve as a recruitment film for new engineers. A statue of Archimedes is brought to life to badger a museum porter with many-told tales of the wonders of the machine age. Prints are to be offered to industry at \$219 each. It was sponsored by the American Society of Mechanical Engineers, 29 West 39th St., New York 18, N.Y.

Two recent films, the distinguished *Decision for Chemistry* (reviewed September 1953, page 114) and the very effective *Eager Minds* (reviewed December 1954, page 23) served ably in these same areas for chemical and electrical engineering.

### Wide screens Coming to Business Films

Business films first gained breadth two years ago with the films produced by Ford to introduce the 1954 models to dealers and salesmen.

The impressive sweep of the wide screen was most effective for showing the cars and trucks in action.

Since then both Ford and Chevrolet have made additional wide-screen motion pictures but the recent introduction of new anamorphic (wide-screen) lenses for 16 mm. cameras and projectors will likely give a fresh fillip to this type of business film. The two largest producers of business films look for a steady rise in the making of wide-screen movies for business and industry.

The "Vistascope" lens, which is made in Holland and imported by J. L. Galef and Sons, Inc. of New York, sells for only \$125 and can be used for both shooting and projection. The lack of low-cost projection lenses has been instrumental in holding back the growth of wide-screens in business and throughout the rest of the 16 mm. field in which about 20 million people see films each week.

Single and double-purpose lenses are also available from Bell and Howell, Bausch and Lomb and other companies.

The use of wide-screen in busi-

### MANAGEMENT EATS SPINACH—WHOLESALE!

The difference between management and people is quantity.

Management doesn't buy a lathe; it sets company policy on plant modernization;

Management doesn't pick the gage metal to use on the new model; it decides whether it shall be metal or plastic;

Management doesn't send for a "fluorescent lamp," but it decides on better lighting;

Management doesn't buy a truck for the company, but it decides on company-owned trucks, or leased trucks.

In everything from spinach to factories, management does things wholesale. Management always decides the fundamentals. Fundamentals are determined by ideas. The one who sells the ideas has the best chance of selling the goods.

The best place to sell ideas about your product to management is in DUN'S REVIEW AND MODERN INDUSTRY because no other magazine concentrates so much of its circulation on management.

*When management decides*

..... *Everybody acts.*

D U N ' S R E V I E W and

ness films will be limited for some time to those films which are shown directly by individual companies, for example the Ford and Chevrolet dealer showings. It is unlikely that physical scope will be added to new public relations films or product information pictures which are distributed to the 16 mm. audiences in clubs, churches, schools, associations, industrial plants, and other places. Despite the release of some wide-screen Hollywood feature films to 16 mm. circuits, it is unlikely that there will be a complete changeover to wide-screens in these areas in the next few years.

The first business film to be made with the new "Vistascope" 16 mm. lens will be finished later this month by the Aetna Life Affiliated Companies of Hartford, Conn. as part of its automobile safety "Drivotrainer" program. It will provide a much more realistic view of the sweep of the road as seen through a car's windshield. Machine processes, particularly those which are automated, may be made more meaningful by using this new filming technique. Wide-screen slidefilms are proving most useful for introducing new lines of products and for visualizing complete advertising campaigns.

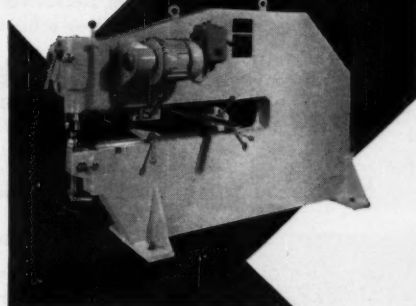


How Wide The Screen?—Chevrolet Film Uses New Techniques

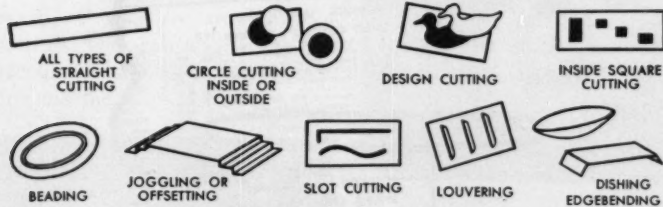
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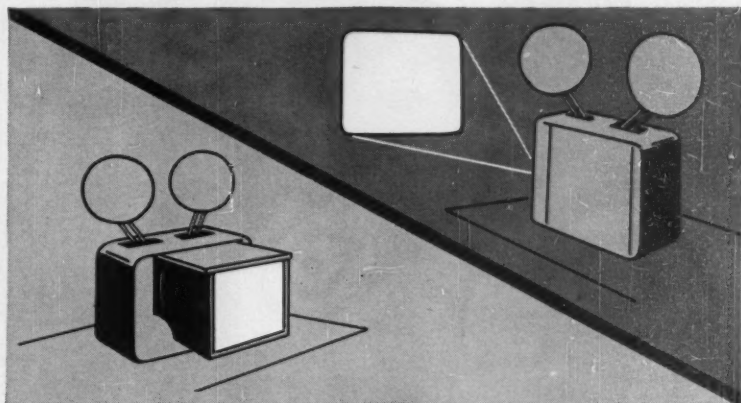
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The TSI-Duolite allows you to increase the field of use for your 16mm films because in the Duolite you get two methods of projection in one unit . . . and for the price of one unit. Now you can show films in rooms and locations where it formerly wasn't convenient or practical. What's more, in most cases the operation of the Duolite is easier and quicker and you get a more effective presentation.

#### Desk Top Showing On Built-In Screen

The Duolite permits you to show black and white or color movies on a large built-in screen without darkening the room. Films can be shown right on your desk top, in the plant, in hotel rooms and in conference rooms without setting up any extra equipment such as a screen, speaker, etc. This makes it ideal for in-plant training sessions, engineering departments, sales departments, advertising departments or wherever films are used.

#### Two Projectors In One!

Just flip a lever, insert another lens and the same projector can be used with large audiences for showing films on any standard external type screen. Both lenses are furnished with the projector. Changing them is simple. Pull . . . and the lens is out. Push . . . and the other lens is in.

The Duolite is a top quality projector throughout. Sturdy construction stands hard knocks without damaging the unit. Service is hardly ever required. When it is, no special tools are needed.

Check now on this most complete projector . . . available only from Technical Service, Inc. You'll find it to be the ideal projector for all of your uses and it's priced right too.



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SERVICE  
INC.**

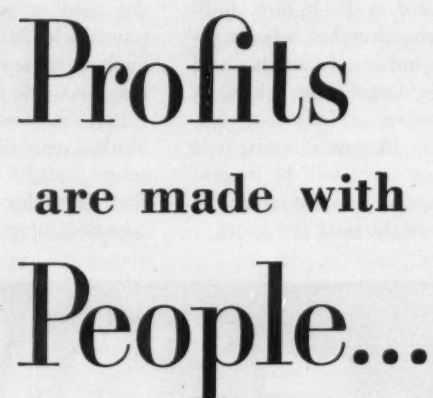
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WE could tell you that, statistically, businessmen in general are optimistic about the sales outlook for the coming year. But right now, you are interested in Harry E. Foster, proprietor of Fairville Lumber Co. in Spirit Corners, who has been moving your merchandise at a profit to himself and you.

What you need to know is, "What is happening in Harry Foster's business? How is he doing? Am I selling him enough? Too much?" That's the type of question about your customers that Dun & Bradstreet service will help you to answer.

The 2,900,000 listings in the Dun & Bradstreet Reference Book represent the people who make and sell the things Americans eat, wear, live in, and ride in. Back of each listing is a comprehensive report describing the history, experience, and qualifications of the people who run the enterprise. Harry E. Foster is only one of them whom you can see and appraise at close range through the eyes of the Dun & Bradstreet reporter.

The Dun & Bradstreet Reference Book is revised every sixty days, covering all buying and selling seasons.

***Dun & Bradstreet, Inc.***

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### How a typical Reference Book listing describes a business

**A**, indicates listing not included in this town in previous edition; **52x11**, Industrial Classification number for lumber yard with secondary line; **Fairville Lumber Co.**, name generally used in buying; **LbrHwr**, abbreviation for lumber and (secondary line) hardware; **5**, year started (1945); **C2**, rating (estimated financial strength, \$75,000 to \$125,000; composite credit appraisal, "good")

*Names on this page are fictional and used for display purposes only.*

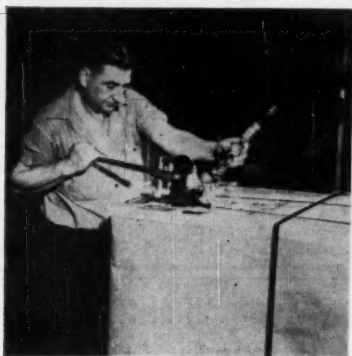
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# Here and There in Business

## WHAT'S NEW

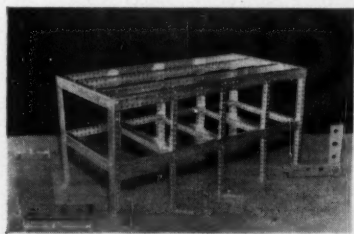
### AS OBSERVED BY THE EDITORS

**Air-powered strapping machine**, said to be the first of its kind, automatically tensions strapping, seals it, and cuts it off. Tension is adjustable up to 1,600 pounds, and the magazine holds



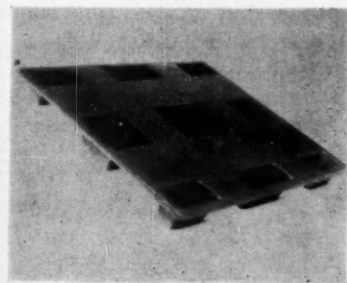
enough material for 75 seals. Cast aluminum and other design features help keep its weight down, to minimize fatigue. Signode Steel Strapping Company, 2600 North Western Avenue, Chicago 47, Ill., makes it.

**Do-it-yourself** steel channels, in scaled-down size for use in making models of plant buildings, work benches, and storage cribs, are now offered by Structo System, Inc., Elyria, Ohio. The regular angles are made in 11, 12, and 14 gage steel in 3 by 1½ by 1½ inches. The model-making sizes are one-third as large. They can also be used as structural materials—for small work bins and the like.

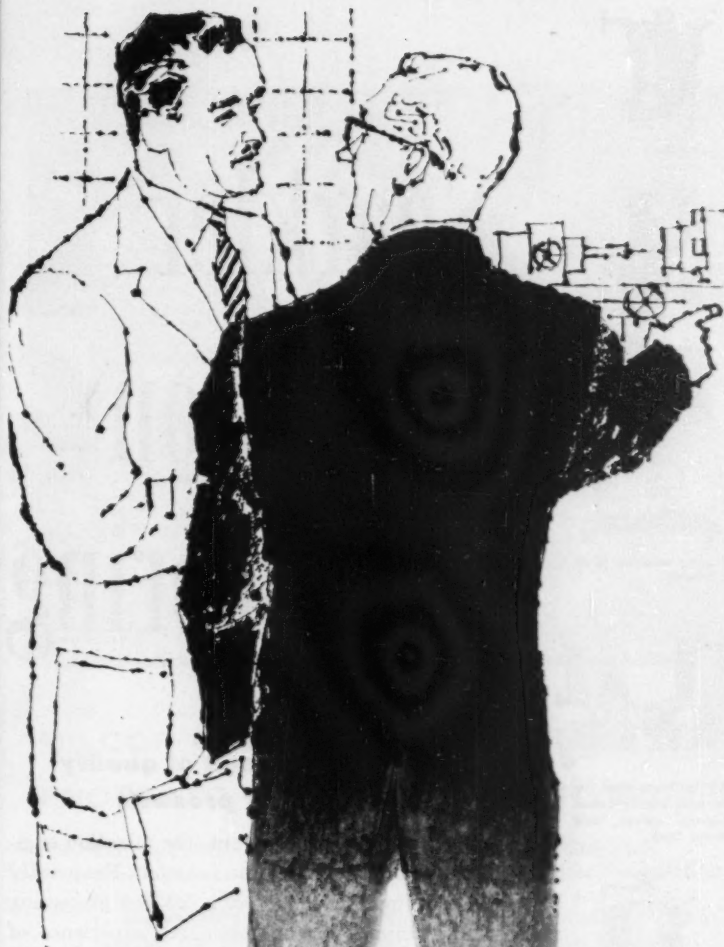


**Electronic scanner** that can monitor up to 25 different production points—checking such variables as temperature, pressure, liquid level, and rate of flow—is introduced by Fielden Instrument Division, Robertshaw-Fulton Controls Company, Philadelphia 33, Pa. It's designed to permit simultaneous checking of all set points (they can be scanned at the rate of one or five points a second), and has self-checking and automatic standardization features. Sectional arrangement of components, with pivots and arms, simplifies maintenance.

**New-type pallet**, made of Bakelite polyester resins, reinforced with glass fibers, can support a 3,000-



pound load, weighs only 28 pounds. Pallets nest for storage (100 of them form a stack less than eight feet high); and can also be used in nested groups of two or three to support heavier loads. By turning



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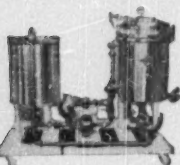
Laboratory filter.



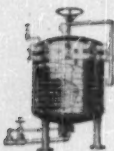
Varnish and lacquer filter.



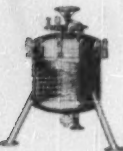
Plating solution filter (portable).



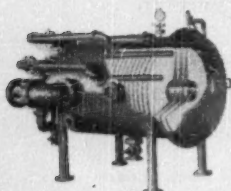
All stainless steel filter with stainless steel piping, valves, and slurry tank.



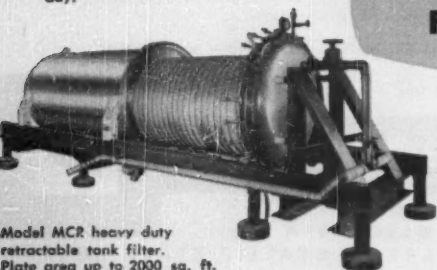
Standard horizontal plate filter.



Beer polishing filter.



Large volume water filter. Model SCJ. Single unit capacity up to 5,000,000 gal. per day.



Model MCR heavy duty retractable tank filter. Plate area up to 2000 sq. ft.

# Sparkler Filtration Engineering

**...the key point of quality for many products**

In planning a plant layout, the filtration engineer can perform a basic function. Frequently the ultimate efficiency of a modern processing plant hinges on the specialized experience of the filtration engineer.

By concentrating on filtration engineering and manufacturing exclusively over the past 30 years Sparkler has been successful in improving filtration processes through sound engineering and with the development of hundreds of special filters particularly adapted to the requirements of food products, chemicals, pharmaceuticals, petroleum and derivatives, beer, whisky, sugar refining, electroplating and many other products as well as large volume water filtration for municipal and industrial use.

**SPARKLER MANUFACTURING CO.**  
MUNDELEIN, ILL. PHONE MUNDELEIN 6-6430

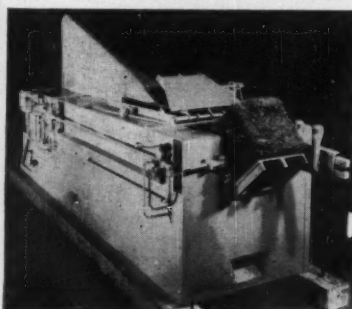
Sparkler International Ltd. with plants in Canada, Holland, Italy, Australia. • Service representatives in principal cities throughout the world.

**SPARKLER FILTERS**

Built to ASME specifications when required.

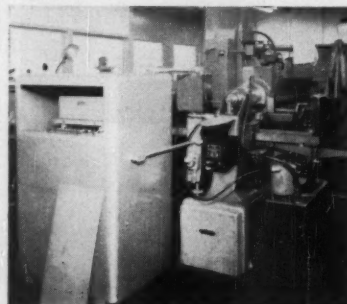
them the opposite way, they'll stand apart as the lower photograph shows. Fimaline Products, Inc., Midland Park, N. J., is the manufacturer.

**Baling machine** for industrial scrap will handle trimmings up to 54 inches in length, requires no pit for installation, is only a little over 12 feet long, 41 inches wide. It can be powered by 5, 7½, or 10 horsepower motors, turns out briquettes 12 inches on a side. The newly-organized Balemaster Division of East Chicago Machine Tool Corpo-



ration, 4801 Railroad Avenue, East Chicago, Ind., makes this machine and is also readying a *Cyclomatic* automatic baling system. The *Cyclomatic* system is designed for volume handling of paper and cardboard—as much as 30 tons in an eight-hour shift. It consists of a feed conveyor, a hogger (to cut up the material being baled), a blower, a cyclone separator, and the baling press itself. This system, too, can be installed without a pit. Bale weight is 800 to 1,200 pounds.

**Electricity does all the work** in the grinding machine pictured here. It's an electrolytic grinder, electronically controlled, for cutting and shaping such materials as tungsten carbide, alloy steels, and titanium. Made by Anocut Engineering Company, 631 West Washington Blvd., Chicago 6, Ill., the ma-



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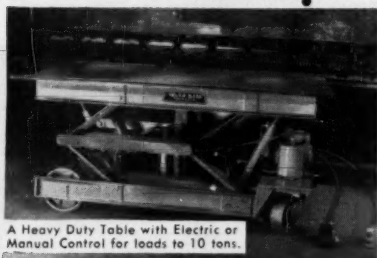
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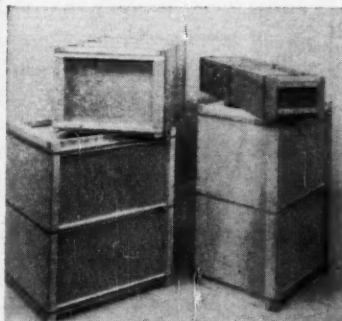
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**THE RONALD PRESS COMPANY**  
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chine resembles a conventional grinder, but grinding is actually done by "dissolving" the work electrolytically. The grinding wheel (a specially made, conductive unit) acts as a cathode, and the work itself as the anode; while the ordinary grinding coolant is replaced by an electrolytic solution. An electronic control system (left) is designed to assure correct regulation of current density. The machine can be used for tool making or sharpening; or for production work on hard materials.

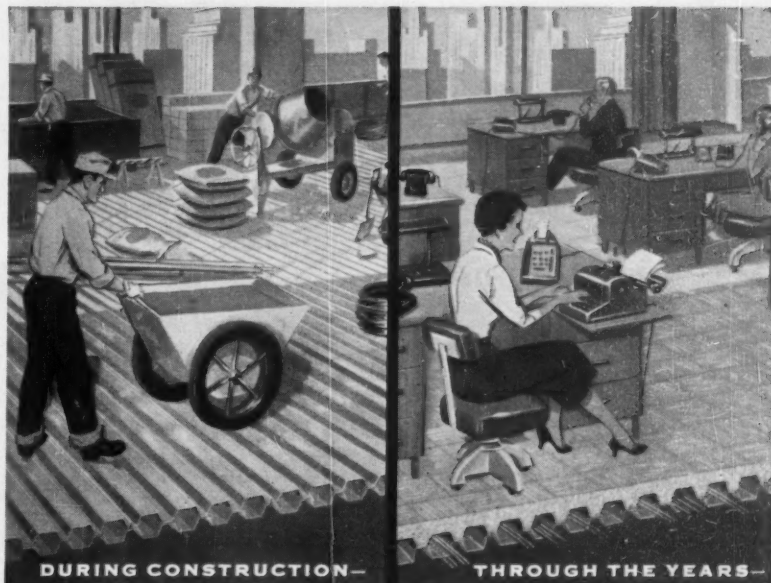
**Corporate educational gifts** will receive recognition by the editors of "Who's Who in America," this coming February. Citations for the largest and most significant gifts to educational institutions are to be awarded just as they have been made to individuals and estates in the past. Time period to be covered for these first awards is the past two years (July 1, 1953 to June 30, 1955), and honorary mentions will also be awarded. The editors hope to stimulate increased corporate philanthropy by this special recognition.

**New box design**, with interlocking cleats, can be assembled without additional fasteners. Patented by Cardinal Containers, 800 Fair Oaks Avenue, Oak Park, Ill., the *Panel-lox* design is now available for licensing to box makers. According to Cardinal, boxes can



be made in any size, and plywood, veneer, lumber, and veneer-kraft panels can be used. Panels are pre-assembled (using nails, staples, or glue to attach cleats), can be stored flat until needed. Photograph shows several typical constructions.

**New counter** that can act as a remote control is made by Durant Manufacturing Company, Milwaukee 1, Wis. Electrically-operated, it



## MILCOR CELLUFLOOR'S TOUGH SKIN

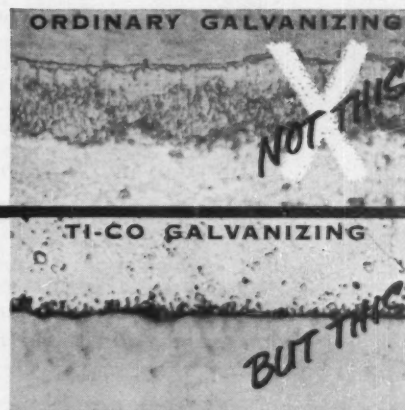
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This extra protection against deterioration of your investment is built into Milcor Cellufloor by a leader in the building field for more than half a century — Inland Steel Products Company, a subsidiary of Inland Steel Company, Chicago.

**MILCOR<sup>®</sup> CELLUFLOOR**

Ordinary galvanizing, shown in this photomicrograph, has a brittle iron-zinc layer which makes it subject to cracking and flaking.



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can be pre-set for any number from 1 to 99,999, has a speed of 600 counts a minute. Hinged cover protects against dust and moisture, but permits easy access for setting wheels. Suggested applications include addressing and tabulating machines, packaging equipment, conveyor lines, machine tools, coil winders, electronic units.

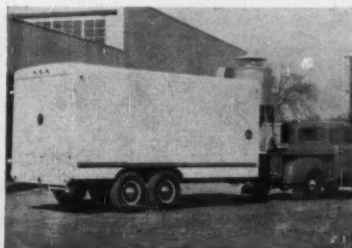
**Three jobs**—loading, unloading, and indexing—are combined in this unit, built by Hautau Engineering Company, 721 Wanda, Detroit 20, Mich. It's a 42-station, fif-



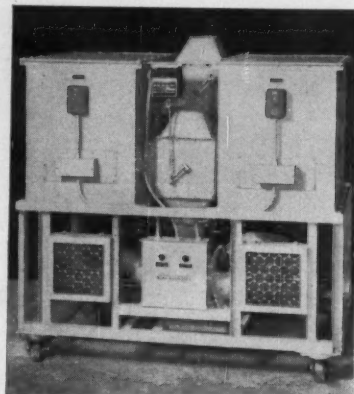
teen-ton giant which, says Hautau, can be indexed in two seconds and unloaded at the same time. The company makes the basic unit in a wide range of sizes, also builds individual loaders and indexing tables and designs special clamps to facilitate loading and unloading.

**Water chillers** that can be installed outdoors, thus saving valuable space inside the plant, are now offered by The Trane Company, La Crosse, Wis. Available in refrigeration capacities ranging from 50 to 800 tons, the new weather-proofed CenTraVac units even have electric heaters to prevent condensation of moisture when the outside temperature drops. They can provide chilled water for air conditioning or process use.

**Semi-trailer**, designed to fill the gap between light pick-up trucks



and full trailers, is introduced by Wells Cargo Division of Prairie Schooner, Inc., Elkhart, Ind. It can be attached to jeeps, light trucks, and the like; has a payload capacity of four tons (710 cubic feet); is free-standing.



**Heavy-duty dehumidifier**, designed for large areas (factories, warehouses, and the like), uses silica gel as drying agent; is said to maintain humidities down to 10 per cent. Dryomatic Corporation, Alexandria, Va., the manufacturer, explains that the double-unit setup makes it possible to keep operation continuous while regenerating drying agent.

**New casters** feature molded neoprene grease seal, vulcanized to upper bearing raceway, are designed to operate at temperatures from zero to 200° fahrenheit. Faultless Caster Corporation, Evansville 7, Ind., supplies these "Triple Grease Sealed" casters in a variety of wheel types and diameters, with hard or cushion treads, for load ratings up to 650 pounds per caster. Permanently-attached pressure-type grease fittings are provided to simplify lubrication.

**New wicking material**, made of synthetic fibers, is said to overcome the problems posed by both wool felts (need for hand stuffing of bearing reservoirs) and pulverized materials (tendency to clog the line). Made by Congress Drives Division, Tann Corporation, Detroit 34, Mich., the new Permawick material is said to permit injection of twice as much lubricant into oil reservoirs and to make it possible to use sleeve bearings in a number of places where only ball bearings could be satisfactorily applied before.

## DEFINITIONS OF TERMS USED IN FOURTEEN IMPORTANT RATIOS

**THE RATIOS**—The data used are based upon a representative sampling with a tangible net worth which only occasionally is below \$50,000. . . . The center figure for each of the twelve lines is the median. The other two figures in each line are quartiles; for each ratio they indicate the upper and lower limits of the experiences of that half of the concerns whose ratios are nearest to the median. When any figures are listed in order according to their size, the median is the middle figure (same number of items from the top and the bottom) and the quartiles are the figures that are located one-quarter and three-quarters down the list.

**COLLECTION PERIOD**—The number of days that the total of trade accounts and notes receivable (including assigned accounts and discounted notes, if any) less reserves for bad debts, represents when compared with the annual net credit sales. Formula—divide the annual net credit sales by 365 days to obtain the average credit sales per day. Then divide the total of accounts and notes receivable (plus any discounted notes receivable) by the average credit sales per day to obtain the average collection period.

**CURRENT ASSETS**—Total of cash, accounts and notes receivable for the sales of merchandise in regular trade quarters less any reserves for bad debts, advances on merchandise, inventory less any reserves, listed securities when not in excess of market. State and municipal bonds not in excess of market, and United States Government securities.

**CURRENT DEBT**—Total of all liabilities due within one year from statement date including current payments on serial notes, mortgages, debentures, or other funded debts. This item also includes current reserves such as gross reserves for Federal income and excess profit taxes, reserves for contingencies set up for specific purposes, but does not include reserves for depreciation.

**FIXED ASSETS**—The sum of the cost value of land and the depreciated book values of

buildings, leasehold improvements, fixtures, furniture, machinery, tools, and equipment.

**FUNDED DEBT**—Mortgages, bonds, debentures, gold notes, serial notes, or other obligations with maturity of more than one year from the statement date.

**INVENTORY**—The sum of raw material, material in process, and finished merchandise. It does not include supplies.

**NET PROFITS**—Profit after full depreciation on buildings, machinery, equipment, furniture, and other assets of a fixed nature; after reserves for Federal income and excess profit taxes; after reduction in the value of inventory to cost or market, whichever is lower, after charge-offs for bad debts; after miscellaneous reserves and adjustments; but before dividends or withdrawals.

**NET SALES**—The dollar volume of business transacted for 365 days net after deductions for returns, allowances, and discounts from gross sales.

**NET SALES TO INVENTORY**—The quotient obtained by dividing the annual net sales by the statement inventory. This quotient does not represent the actual physical turnover which would be determined by reducing the annual net sales to the cost of goods sold, and then dividing the resulting figure by the statement inventory.

**NET WORKING CAPITAL**—The excess of the current assets over the current debt.

**TANGIBLE NET WORTH**—The sum of all outstanding preferred or preference stocks (if any) and outstanding common stocks, surplus, and undivided profits, less any intangible items in the assets, such as good-will, trade-marks, patents, copyrights, leaseholds, mailing list, treasury stock, organization expenses, and underwriting discounts and expenses.

**TURNOVER OF TANGIBLE NET WORTH**—The quotient obtained by dividing annual net sales by tangible net worth.

**TURNOVER OF NET WORKING CAPITAL**—The quotient obtained by dividing annual net sales by net working capital.

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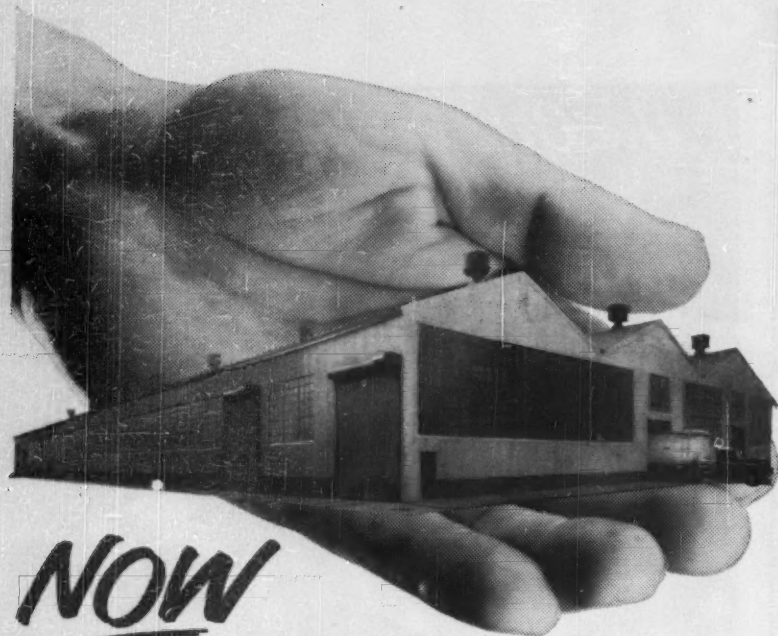
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## ADVERTISING INDEX

ACCO PRODUCTS, INC. .... 87 LaPorte & Austin, Inc.	CUTLER-HAMMER, INC. .... 19 Kirkgasser-Drew
ALAN WOOD STEEL COMPANY ..... 5 Doremus-Eshleman Company	DANLY MACHINE SPECIALTIES, INC. 20-21 Waldie and Briggs, Inc.
ALLEGHENY LUDLUM STEEL CORP. .... 118 Walker & Downing, General Agency	DAYTON ROGERS MANUFACTURING COMPANY ..... 116
ALLEN, ALVA F., INDUSTRIES ..... 14 Cooper Advertising Agency	DENISON ENGINEERING COMPANY, THE ..... 28 The Griswold-Eshleman Co.
ALLEN, R. C., BUSINESS MACHINES, INC. .... 88 Wesley Aves & Associates, Inc.	DETREX CORPORATION ..... 130 Gray & Kilgore, Inc.
ALLIED RESEARCH PRODUCTS, INC. .... 4 Emery Advertising Corporation	DIAMOND CHAIN COMPANY, INC. .... 17 Kirkgasser-Drew
ALLIS-CHALMERS MFG. CO. .... 25 Compton Advertising, Inc.	DICTAPHONE CORPORATION ..... 101 Young & Rubicam, Inc.
AMERICAN APPRAISAL COMPANY, THE 144 The Buchen Company	DIEBOLD INCORPORATED ..... 109 Penn and Hamaker, Inc.
AMERICAN CREDIT INDEMNITY COMPANY ..... 120 Van Sant, Dugdale & Company, Inc.	DITTO, INCORPORATED ..... 62 Tim Morrow Advertising, Inc.
AMERICAN DICTATING MACHINE COMPANY ..... 56 Diener & Dorskind, Inc.	DRAKE, STARTZMAN, SHEAHAN AND BARCLAY ..... 116 Marsteller, Rickard, Gebhardt and Reed, Inc.
AMERICAN PULLMAX COMPANY, INC. .... 141 Grimm & Craigle, Inc.	DUN & BRADSTREET, INC. .... 142
AMERICAN TELEPHONE & TELEGRAPH COMPANY ..... 150 N. W. Ayer & Son, Inc.	EAGLE PENCIL COMPANY ..... 112 French & Preston, Inc.
ARNOLT CORPORATION ..... 96 Scantlin & Company	EAGLE-PICHER COMPANY, THE ..... 13 The Ralph H. Jones Co.
ART METAL CONSTRUCTION COMPANY ..... 113 Comstock & Company	EASTMAN KODAK COMPANY (AUDIO-VISUAL) ..... 117 Charles L. Rumrill & Co., Inc.
AUTOMATIC ELECTRIC SALES CORPORATION ..... 83, 84, 85, 86 Proebsting, Taylor Inc.	EBASCO SERVICES INCORPORATED ..... 76 Albert Frank-Guenther Law, Inc.
AXELSON MANUFACTURING COMPANY ..... Cover II Grimm & Craigle, Inc.	ECONOMY ENGINEERING CO. .... 23 Kreicker & Meloan, Inc.
BAKELITE COMPANY, A DIVISION OF UNION CARBIDE & CARBON CORPORATION ..... 121, Cover III J. M. Mathes, Inc.	EGRY REGISTER COMPANY, THE ..... 108 The Parker Advertising Company
BAKER-RAULANG CO., THE ..... 24 G. M. Basford Company	EXECUTIVE LINE, THE ..... 119 The Kaplan Agency
BALTIMORE & OHIO RAILROAD ..... 16 The Richard A. Foley Advertising Agency	EXECUTONE, INC. .... 63 The Joseph Katz Company
BANKERS BOX COMPANY ..... 74 Frank C. Jacobi Advertising	FARNSWORTH ELECTRONICS COM- PANY, A DIVISION OF IT&T ..... 10 Chamberlin-Junk Advertising, Inc.
BARRETT-CRAVENS COMPANY ..... 8 The Buchen Company	FAULTLESS CASTER CORPORATION ..... 122 Perrin-Paus Company
BASSETT, W. E., COMPANY, THE ..... 147 Neary Advertising Agency	FEDERAL TELEPHONE AND RADIO COMPANY, A DIVISION OF IT&T ..... 115 J. M. Mathes, Inc.
BORG-WARNER CORPORATION ..... 134 Rogers & Smith	FELT & TARRANT MANUFACTURING COMPANY ..... 87 N. W. Ayer & Son, Inc.
BREUER ELECTRIC MFG. CO. .... 136 Grimm & Craigle, Inc.	FILMSORT DIVISION, DEXTER FOLDER COMPANY ..... 110
BROWNE-MORSE COMPANY ..... 114 Don Harding & Associates	FORCE, WM. A. & CO., INC. .... 102 Philip I. Ross Co.
BRUNING, CHARLES, COMPANY, INC. .... 72 H. W. Kastor & Sons Advertising Company, Inc.	GENERAL AMERICAN TRANSPORTA- TION COMPANY, PLASTICS DIVISION ..... 51 Weiss and Geller, Inc.
BUNN, B. H. CO. .... 105 Robertson, Buckley & Gotsch, Inc.	GENERAL BINDING CORP. .... 114 Robertson, Buckley & Gotsch, Inc.
BURROUGHS CORPORATION ..... 92 Campbell-Ewald Company	GENERAL ELECTRIC CO., ELECTRONICS DIV. .... 18 Maxon, Inc.
CAMBRIDGE WIRE CLOTH CO., THE ..... 116 Emery Advertising Corporation	GLICKMAN, LOUIS J. .... 116 S. Posner & Company
CHASE MANHATTAN BANK, THE ..... 126 Albert Frank-Guenther Law, Inc.	GLOBE-WERNICKE CO., THE ..... 107 Strauchen & McKim
CHICAGO HARDWARE FOUNDRY CO. .... 18 Wilson Advertising Service	GR PRODUCTS INC. .... 96 Notman-Navan, Inc.
CHRYSLER CORPORATION, AMPLEX DIVISION ..... 34 Ralph Sharp Advertising Inc.	GRAPHIC SYSTEMS ..... 96 Diener & Dorskind, Inc.
CITIES SERVICE COMPANY ..... 3 Albert Frank-Guenther Law, Inc.	GUMMED PRODUCTS COMPANY, THE .. 64 E. M. Freystadt Associates, Inc.
CITY BANK FARMERS TRUST CO. .... 146 Kennedy Sinclair, Inc.	HANSEN, A. L., MFG. CO. .... 139 J. M. Haggard, Advertising
COLUMBIA RIBBON AND CARBON MFG. CO. .... 74 E. M. Freystadt Associates, Inc.	HARTER CORPORATION ..... 90 Lampert, Fox, Prell & Dolk Inc.
COLUMBIAN ART WORKS ..... 81 The Cramer-Krasselt Co.	HEARNE BROTHERS ..... 34 Schippers Associates
CONSUMERS POWER COMPANY ..... 135 Commonwealth Services, Inc.	HEINN, COMPANY, THE ..... 97 Paulson-Gerlach & Associates, Inc.
COPEASE CORPORATION ..... 112 Anderson & Cairns, Inc.	HELLER, WALTER E., & COMPANY ..... 140 R. M. Loeff Advertising, Inc.
CRAMER POSTURE CHAIR CO., INC. .... 102 D. L. Goldsberry & Co.	HERTZ TRUCK RENTAL SYSTEM ..... 30 Campbell-Ewald Company
CUMMINS-CHICAGO CORP., CUMMINS BUSINESS MACHINES DIVISION ..... 60 Waldie and Briggs, Inc.	HEYER CORPORATION, THE ..... 90 Frank C. Jacobi Advertising
CUSTOM DIE COMPANY ..... 7 Capital Advertising, Inc.	

HILD FLOOR MACHINE CO.....139 Tim Morrow Advertising Inc.	REMINGTON RAND, DIVISION OF SPERRY RAND CORPORATION..... 79 Leeford Advertising Agency, Inc.
INDIANA DESK COMPANY..... 74 Keller-Crescent Co.	REVERE COPPER AND BRASS INCORPORATED.....138 St. Georges & Keyes, Inc.
INDUSTRIAL MARKING EQUIPMENT COMPANY, INC., THE.....114 Rea, Fuller & Company	REVO-FILE DIVISION, THE MOSLER SAFE COMPANY..... 73 Stockton, West, Burkhardt, Inc.
INLAND STEEL PRODUCTS CO.....145 Hoffman & York, Inc.	REVOLVATOR CO..... 18 LaPorte & Austin, Inc.
INSERT-O-MATIC CORP..... 96 Robertson, Buckley & Gotsch, Inc.	RITE-LINE CORPORATION..... 72 E. M. Freystadt Associates, Inc.
INTERNATIONAL BUSINESS MACHINES CORPORATION..... 58 Benton & Bowles, Inc.	ROBBINS, ALFRED, ORGANIZATION, INC.....119 The Kaplan Agency
IRONS & RUSSELL COMPANY..... 30 Knight & Gilbert, Inc.	RONALD PRESS COMPANY, THE.....145
KULJIAN CORPORATION, THE.....131 The Roland G. E. Ullman Organization, Inc.	SCRUGGS, LOYD, COMPANY, THE..... 98 Winius-Brandon Company
LETTEREX CORPORATION, THE.....102 Lewis Edwin Ryan Advertising	SHAW-WALKER..... 68 J. Walter Thompson Company
LOCKWOOD-GREENE ENGINEERS, INC.. 52 The House of J. Hayden Twiss	SHREDMASTER CORPORATION, THE.....114 Cayton, Inc.
MAGLINE, INC..... 14 Rossi and Company	SIGNODE STEEL STRAPPING CO..... 9 The Buchen Company
MAHON, R. C., COMPANY, THE..... 31 Anderson, Inc.	SKELLY OIL COMPANY..... 12 Bruce B. Brewer & Co.
MANIFOLD SUPPLIES CO..... 90 Richard & Gunther, Inc.	SPARKLER MANUFACTURING CO.....144 Kreicker & Meloan, Inc.
MARSH STENCIL MACHINE CO..... 30 Roman Advertising Company	STANDARD REGISTER COMPANY, THE.. 61 Don Kemper Company, Inc.
MATHEWS CONVEYER COMPANY..... 35 Meek and Thomas, Inc.	TECHNICAL SERVICE INCORPORATED..141 Gray & Kilgore, Inc.
McBEE COMPANY, THE..... 75 C. J. LaRoche and Company, Inc.	TEXTILE BANKING COMPANY, INC.....132 L. E. McGiverna & Co., Inc.
McCLOSKEY COMPANY OF PITTSBURGH.....148 Bachman, Kelly & Trautman, Inc.	THOMAS COLLATORS, INC.....106 Wehner Advertising Agency
MILWAUKEE DUSTLESS BRUSH CO..... 14 Al Herr Advertising Agency Inc.	TIMES FACSIMILE CORPORATION, STENAFAX DIVISION.....100 Thomas & Delehanty, Inc.
MITTAG & VOLGER, INC..... 78 Campbell-Ewald Company	TIMKEN ROLLER BEARING COMPANY..... Cover IV Batten, Barton, Durstine & Osborn, Inc.
MONROE COMPANY, THE.....114 Lessing Advertising Company, Inc.	TODD COMPANY, INC., THE..... 82 The Merrill Anderson Company, Inc.
MONROE CALCULATING MACHINE COMPANY, INC.....94-95 Charles W. Hoyt Company, Inc.	TORRINGTON MANUFACTURING COMPANY, THE..... 31 Graceman Advertising Inc.
MONSANTO CHEMICAL COMPANY, PLASTICS DIVISION..... 53 Needham, Louis & Brorby, Inc.	UNDERWOOD CORPORATION..... 99 Brooke, Smith, French & Dorrance, Inc.
MORAINÉ PRODUCTS DIVISION, GENERAL MOTORS CORP..... 32 Campbell-Ewald Company	UNITED STATES RUBBER COMPANY, MECHANICAL GOODS DIV.....123 Fletcher D. Richards, Inc.
MUELLER BRASS CO..... 29 Price, Tanner & Wilcox, Inc.	UNITED STATES STEEL CORP.....129 Batten, Barton, Durstine & Osborn, Inc.
MURRAY, D. J., MFG. CO.....149 R. C. Breth, Inc.	VFEEDER-ROOT, INC..... 54 Sutherland-Abbott
NATIONAL TRUCK LEASING SYSTEM.. 16 W. S. Kirkland Advertising	VICKERS INCORPORATED, DIVISION OF SPERRY RAND CORPORATION.. 15 Witte & Burden
NEENAH PAPER COMPANY..... 64 Burnet-Kuhn Advertising Co.	VISIRECORD, INC.....111 Ashe & Engelmere Advertising, Inc.
NIAGARA MOHAWK POWER CORP..... 22 Batten, Barton, Durstine & Osborn, Inc.	WAGNER ELECTRIC CORPORATION... 35 Arthur R. Mogge, Inc.
NICKEL PLATE ROAD.....122 Fuller & Smith & Ross, Inc.	WASSELL ORGANIZATION, INC..... 88, 108 James R. Flanagan Advertising Agency
OLD TOWN CORPORATION.....104 Charles W. Hoyt Company, Inc.	WATSON MFG. CO., INC., ROL-DEX DIV. 97 Griffith & Rowland
OXFORD FILING SUPPLY CO., INC..... 87 Joseph Reiss Associates	WEBER LABEL AND MARKING SYSTEMS..... 28 Glenn, Jordan, Stoetzel, Inc.
OZALID DIVISION, GENERAL ANALINE & FILM CORPORATION.....103 L. E. McGiverna & Co., Inc.	WEST BEND EQUIPMENT CORP.....145 Morrison-Greene-Seymour, Inc.
PEERLESS PHOTO PRODUCTS, INC..... 89 John Mather Lupton Company, Inc.	WEST DISINFECTING COMPANY..... 27 G. M. Basford Company
PITNEY-BOWES, INC.....62, 80, 91, 100 L. E. McGiverna & Co., Inc.	WESTERN UNION TELEGRAPH CO.....66-67 Albert Frank-Guenther Law, Inc.
PORTER, H. K., COMPANY, INC..... 6 St. Georges & Keyes, Inc.	WESTON, BYRON, COMPANY..... 98 Walter B. Snow & Staff, Inc.
POWER PRODUCTS CORPORATION.....143 Ken Seitz & Associates, Inc.	WIREBOUND BOX MANUFACTURERS ASSOCIATION.....137 Waldie and Briggs, Inc.
RADIO CORPORATION OF AMERICA.....124-125 Al Paul Lefton Company, Inc.	WOOD, R. D., COMPANY..... 26 Harris D. McKinney, Inc.
RECORDAK (SUBSIDIARY OF EASTMAN KODAK CO.)..... 65 J. Walter Thompson Company	WOODCO CORPORATION.....133 Krate-Basch Associates, Inc.



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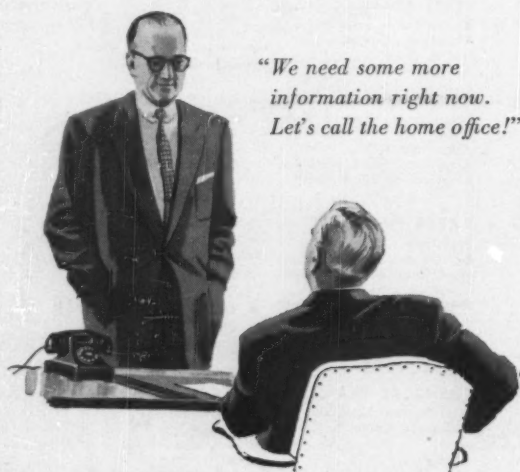




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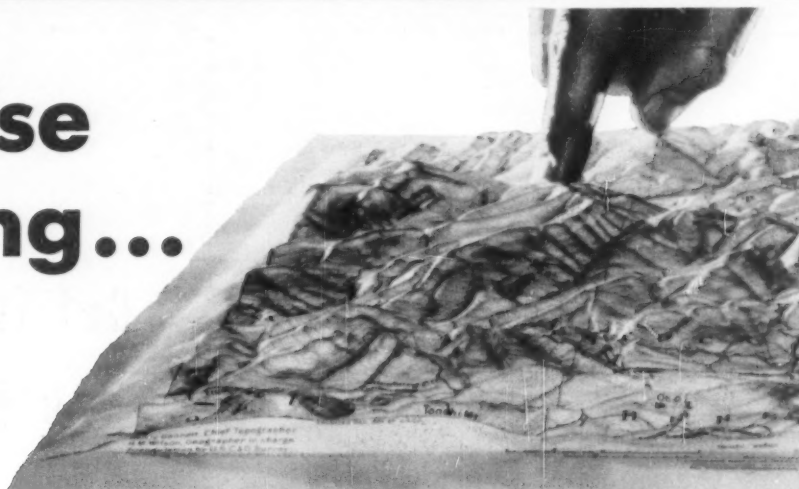
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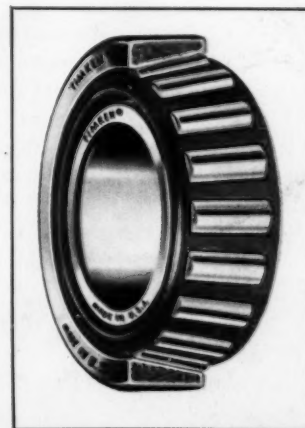
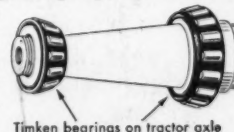
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